DOCUMENT RESUME

ED 021 613 PS 001 001

By- Stern, Carolyn

HEAD START RESEARCH AND EVALUATION OFFICE, UNIVERSITY OF CALIFORNIA AT LOS ANGELES. ANNUAL REPORT, NOVEMBER 1967. SECTION II.

California Univ., Los Angeles.

Spons Agency- Office of Economic Opportunity, Washington, D.C.

Report No- IED-1-66-12

Pub Date Nov 67

Note- 134p.

EDRS Price MF-$0.75 HC-$5.44

Descriptors- *ACADEMIC ACHIEVEMENT, BEHAVIOR PATTERNS, CHANGING ATTITUDES, *CULTURALLY DISADVANTAGED, DIALECTS, EVALUATION METHODS, HOME INSTRUCTION, LEARNING, MATHEMATICAL CONCEPTS, PARENT ATTITUDES, *PRESCHOOL CHILDREN, PROBLEM SOLVING, PUZZLES, RESEARCH PROJECTS, *SOCIOLINGUISTICS, SUBCULTURE

Identifiers- Head Start

A Head Start research report on ways to improve academic achievement of disadvantaged children describes five projects: (1) a study of sociolinguistic variables in school learning and problem solving when classes are taught in dialect versus standard English; (2) subcultural determinants of cooperative and competitive behavior in preschool children as a function of reward condtion, sex, and ethnic background, and group versus individual reward contingencies as a measure of differences in cooperation and competition (a cross-cultural comparison was also made of such behavior in kibbutz and urban children in Israel); (3) measurement of change in social and personal attitudes of parents which investigated the effect of their participation in Head Start on subsequent use of community resources, the measurement of changes in parental feelings of alienation as a result of participation, and the evaluation of special instruction in improving the home teaching of parents of disadvantaged children; (4) development of evaluation instruments to study the echoic responding of disadvantaged preschoolers as a function of the type of speech modeled; and (5) an experimental study of variables in teaching mathematical concepts to investigate the effectiveness of instruction in puzzle-assembly skills. (MS)

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

# ANNUAL REPORT

November, 1967

ED021613

HEAD START RESEARCH AND EVALUATION OFFICE

Dr. Carolyn Stern, Director

PS001001

University of California at Los Angeles
1019 Gayley Avenue
Los Angeles, California 90024

Office of Economic Opportunity Contract Number IED 1-66-12

# SECTION II. RESEARCH

Underlying the entire Head Start program is a basic philosophical assumption: that it is important for all children to be given the opportunities and experiences which presumably lead to successful academic accomplishment. It represents the position that competence in school has important and desirable consequences not only for the individual child but also for the total society. In essence, then, Head Start assumes that school success is something worth striving for. While these values are incorporated in the ego structure of the average American child at a very early age, it does not seem to have developed significant motivational importance in the child from the economically-disadvantaged environment.

Teachers of these children frequently report that a basic problem is obtaining and retaining attention to academic activities. In addition, even when the child's attention is momentarily drawn to the instructional materials, which may have been carefully selected to assure successful behavior on the part of the child, his success does not seem to have the anticipated reinforcement value. Perhaps these children have not learned to view adult social approval as rewarding, or perhaps competence in the academic situation does not carry with it that assurance of adult success with which the middle-class world is imbued.

Since the problem of establishing and evaluating academic achievement motivation is of such crucial importance in fulfilling the goals of Project Head Start, the over-riding objective of the research program at the UCLA Evaluation and Research Center is to explore ways of producing and measuring changes in behavior which will lead to improved school performance of educationally-disadvantaged children.

# Project I

## Sociolinguistic Variables in School Learning and Problem Solving

Principal Investigator

Evan R. Keislar, Department of Education

| Research Assistants | Art and Production |
|---|---|
| Samuel Schutz | June Marshall |
| Lynne Schwab | Lawrence Steinhauer |
| Sally Thomas | Clarence Young |

The point has often been made that disadvantaged children are not handicapped in their thinking processes even though their language is different from standard English. Their dialect is said to possess a "universal grammar" as effective in learning situations as standard middle-class English. To test this hypothesis, a number of experiments are under way. The first study, "An experimental investigation of the use of dialect vs standard English as a language of instruction", has been completed and is included in this report.

Two groups of Head Start children were given the same instructional programs, one having the commentary in standard English, the other in the local dialect, and the efficiency of the learning under these conditions was compared. In addition, the 2 x 2 experimental design tested the value of having the child speak aloud the key words or concepts during the programmed sequence.

# An experimental investigation of the use of dialect vs standard English as a language of instruction

One of the major questions facing educators of the disadvantaged child relates to the extent to which the Negro dialect should be used as a medium of instruction. It has been argued (e.g. Bull, 1955) that educational programs should use the vernacular of the child himself to follow the principle of "beginning where the child is." In the Mississippi Action Program, the dialect of the child is taken so seriously that the reading materials are prepared and written in the same dialect form which the child uses for his own speech. Some individuals have proposed that Negro children should be taught by Negro teachers, one reason being that in this way they are likely to get instruction in their own dialect rather than a middle class speech quite different from their own.

However, Cazden (1964) has pointed out that the child should learn standard English for a number of different reasons: (1) standard English is likely to be a more powerful means of communication; (2) children who speak a dialect will have difficulty understanding their teachers and schoolbooks; and (3) children who speak standard English are more likely to be accepted in our society and to gain greater social and economic status as a result. There is considerable evidence to suggest that a non-standard dialect fails to match the resource level of standard English. Fries (1940), Loban (1963), and Strickland (1962) all provide some support for this deficiency hypothesis.

The child who does not speak standard English and who is not likely to hear it within his own family is assumed to be handicapped when he is taught by teachers who use standard English. However, there is little empirical evidence to support this. Thomas, Schutz & Keislar (1967) found that kindergarten children who come from a culturally deprived area of an urban city, produce more appropriate responses to incomplete sentences in which only the key words are presented than do middle-class children. The latter group respond far better when a complete interrogative sentence is used. This finding suggests that middle class children are better equipped to handle the type of directions and questions which are characteristic of the language of the middle-class teacher. This study was based on an experiment in which test items were phrased in several different ways, and did not attempt to compare different instructional procedures.

A major problem for this investigation was to study the relative effects of providing instruction for culturally deprived four-year-old Negro children in the Head Start classroom in a conventional Negro dialect as compared with standard English.

A second area of interest in the present study deals with the effect of having children respond to instructions by speaking aloud the relevant cues. Tracy Kendler (1967) found that kindergarten children demonstrate superior performance in a problem solving situation when they are asked to say aloud the key words or phrases involved in the instruction. This was particularly true for the younger children who had not yet learned to internalize speech. It may well be that educationally handicapped children would profit from this practice of saying words aloud within the context of an instructional setting.

## Hypotheses

Two major hypotheses were therefore formulated for this investigation:

1) Educationally disadvantaged Negro children who are instructed in a dialect form will learn more than a comparable group who receive the same instructions in standard English.

2) Educationally disadvantaged five-year-old Negro children who are

required to produce key words aloud during an instructional program will learn more than a comparable group of children who make selection and marking responses during the program but do not say words aloud.

## Method

### Subjects

The original sample of subjects consisted of 34 children enrolled in two Head Start Centers in the Los Angeles area. However, since the study was carried out during the summer, the attrition rate was 50% so that only 17 children completed the study.

### Procedure

Two related experiments were carried out with the same sample of children. The design was exactly the same in each study, with each subject assigned to the same experimental group. The difference was primarily in terms of the content of the instructional programs. In the first experiment the children were taught about four undersea animals: octopus, seahorse, crab, and coral. The children learned about the food, abode, method of locomotion, and self protection for each of these sea animals. In the second experiment children learned about the life of the bee. They became acquainted with the function of the queen bee, the worker, and the drone, the way in which honey is collected and stored, the care of the young, and how new colonies are established.

In both experiments children were given daily sessions lasting about ten to twelve minutes each. An orientation lesson was given on the first day. On the second, Experiment I was begun with a pretest on Undersea Animals. Then four daily lessons were given on this topic with the posttest ending the first experiment on the seventh day. Experiment II was started on the eighth day with a pretest on Bees. On the ninth and tenth days two lessons were given per day at least one hour apart. The posttest was administered on the eleventh day. This stepped-up schedule for the second experiment was necessary because the summer session closed two weeks before the date originally set. However, no effect either in terms of fatigue or lack of interest was noted.

The instructional program was carried out with small groups of children, two-to-four at a time. Children listened to the commentary on a tape recorder as the appropriate visual material was presented in the prearranged sequence. It was thus possible to duplicate the instructional procedures almost exactly from one lesson to the next. The exact commentary used for the instruction is found in Appendix A. An assistant was used to operate the equipment and to monitor the children's performance.

The activities varied from one day to the next. Booklets were used for all tests. For each item, children selected and marked one of three pictures on a page. For some of the lessons children were given a set of cards from which each child could select and hold up the appropriate one in answer to questions presented on the tape. A large construction of a porthole (about 36" x 36") was used as a frame for the program, and a large cardboard representation of a hive for the bee program.

## Treatments

Children were assigned at random to one of four treatment groups, in a 2 x 2 experimental design. The first variable was concerned with the type of response made by the child; the second varied the aural stimulus, i.e. the type of commentary heard by the child. Half of the population, randomly assigned to the Oral group, responded overtly to the questions posed on the tape as well as by marking booklets or holding up cards to the multiple choice questions. The other half of the population, the Non-oral group, were not required to say the key words aloud. They did, however, make selection responses in each of the multiple choice situations. The difference between these two treatments, therefore, was not in terms of overt vs non-overt response but rather in terms of the presence or absence of a verbal response. It should be noted that the critical word spoken by the Oral group was repeated an extra time in the taped commentary prepared for the Non-oral group. This was done to equalize the total number of times a word was heard by all the children.

Half of the population in both the Oral and Non-oral groups heard the taped commentary spoken in standard English; the other half of each group heard the commentary in dialect. These two versions were recorded by a professional Negro actress. This highly qualified expert was able to supply a faithful rendition of the commentary first in standard English and second in the dialect used by members of the Negro community in Los Angeles. In recording the dialect version methods used in the film industry were adopted. That is, with the printed standard English form in front of her, the actress produced a dialect rendition which created a natural rather than a stilted and artificial word-for-word translation.

## Criterion Tests

For each experiment, the posttest consisted of 15 items presented twice: once with the standard English pronunciation and again with the dialect forms. The Dialect groups were given the 15 items in dialect first and then the same items in standard English; the standard English groups got the standard English presentation first and the dialect second. Thus all children received a 30 item posttest. Three of the 15 items were of a general "warm-up" type, six of the items were vocabulary items, and six involved a new application or interpretation of the information presented in the program. Since all the items contained three choices, the chance score was 10. The items were presented in booklets with one item per page. The child was required to select and mark the alternative in answer to the taped question. Five different colors were used for the pages in the booklet so that the examiner could quickly check to see if all the children were looking at the correct page. It should be noted that no speaking response was required on the posttest; all responses consisted of selecting and marking alternatives presented in the booklets. This multiple choice response was behavior with which both Oral and Non-oral groups had had equal experience during the instructional program.

## Results

The means and standard deviation on both the pretest and posttest for the four experimental groups are presented in Table 1.

- - - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - - -

It may be noted that for Experiment I the differences between the Oral and Non-oral groups are not consistent. On the other hand, the two groups receiving standard English did better on the posttest than did the dialect groups. The children who heard the commentary in dialect showed an average score of 17.9 while the children who heard it in standard English showed an average posttest score of 22.1. Table 2 shows the results of an analysis of covariance for posttest results. Here it may be noted that the

- - - - - - - - - - - - - -

Insert Table 2 about here

- - - - - - - - - - - - - -

difference between the Oral and Non-oral groups is not significant but the differences between the dialect and standard English groups on the first experiment is significant at the .05 level. The major finding of Experiment I therefore is that the factor of dialect is significant but in a direction opposite to that predicted in the hypothesis for the study.

As can be seen by reference to Tables 1 and 2, no significant effects were obtained on Experiment II. The differences between the Oral and Non-oral groups are somewhat greater than in Experiment I but not more than can be expected by chance.

It is of interest to note that while pretest scores do not differ significantly among the groups within each experiment, the children did far better on the pretest in Experiment II than they did in Experiment I. In Experiment I the pretest scores for the four groups averaged very close to a chance score (the mean for all subjects combined was 8.5 with a standard deviation of 1.8). In Experiment II the pretest scores on the other hand were considerably higher (mean 12.7, standard deviation 2.7). The difference between the pretests for the two experiments is significant at the .001 level ($t = 4.9$).

It should be noted that the posttest scores in Experiment II are generally lower than in Experiment I, suggesting that either the test was harder, the goals more difficult, or the instructional program not as effective as in the first experiment. The total posttest mean for Experiment I was 19.8 with a standard deviation of 4.3. The corresponding values for Experiment II were 13.9 and 3.0.

## Discussion and Conclusions

The major finding of this investigation was quite unexpected. These Negro children learned significantly more about the content of the first program (sea animals) when the commentary was presented in standard English than when it was presented in a Negro dialect which resembled the dominant dialect in their urban community. However this difference was not maintained in the second experiment, perhaps because the bee program was not as effective and the children did not learn as much, as defined by posttest performance as they did from the sea animal program. In fact, the pretest scores in Experiment II are only slightly lower than the posttest scores (12.7, S.D. 2.7 as compared to 13.9, S.D. 3.0).

An important additional factor may be that at the beginning of the investigation the children found the Negro dialect somewhat strange, especially since the personnel administering the program were Caucasian. Children are accustomed to hearing standard English on television, but they seldom hear Caucasian adults speak in Negro dialect. It is possible that it took a little while for them to become accustomed to this novel situation. By the end of Experiment I, they had become sufficiently familiar with the situation to be able to profit equally from the instruction in Experiment II, whether presented in dialect or standard English.

There is also the possibility that there are such wide variations in dialect regionally, and even from one family to the next, that no single dialect, however "typical", can communicate equally to all children. On the other hand, standard English may be a much more constant form of speech for this entire group.

The study needs to be replicated with an improved instructional program and a larger population of subjects. Special emphasis should be given to checking out some of the hypothesized bases for the differences found. For instance, a linguist should evaluate the degree of match between the dialect version and the dialect spoken in the community. Obviously, it will be impossible to prepare a different dialect tape to suit each child.

In an urban community this problem is aggravated by the fact that families come from a wide variety of geographic and dialect areas.

On the basis of the results of this study, there seems to be little support for an increasingly popular notion that young Negroes would suffer less of a handicap in their early school years if they were initially taught in a dialect with which they are familiar. Instead, evidence has been presented to show that instruction employing standard English produces superior learning under some circumstances. Even if, in a longer replication, a no-difference finding is produced, the ultimate advantages of standard English as an acculturation factor in the dominant middle-class society would support the policy of using standard English in teaching as soon as possible.

## References

Bull, W. A. The use of vernacular languages in fundamental education. International Journal of American Linguistics, 1955, 21, 288-294. Reprinted in D. Hymes (Ed.), Language in culture and society.

Cazden, Courtney B. Some views on subcultural differences in child language. Unpublished manuscript prepared for U. S. Office of Education grant No. OE 5-10-239, Cambridge, Massachusetts, 1964.

Fries, C. C. American English grammar. New York: Appleton-Century, 1940.

Loban, W. D. The language of elementary school children. Champaign, Ill. National Council of Teachers of English, 1963.

Thomas, Sally; Schutz, Samuel & Keislar, Evan. The effect of different verbal directions upon the interpretation of conceptual rules by middle and lower class kindergarten children. Paper to be read at Annual Convention, American Educational Research Association, Chicago, Illinois, February, 1968.

Strickland, Ruth G. The language of elementary school children: its relationship to the language of reading textbooks and the quality of reading of selected children. Bloomington, Indiana: Bulletin of School of Education, Indiana University, 1962, 38, Whole No. 4.

### Table 1

### Means and Standard Deviations on Pre- and Posttest

| | Experiment I | | | | | Experiment II | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | | Posttest | | Pretest | | | Posttest | |
| Group | N | Mean | SD | Mean | SD | N | Mean | SD | Mean | SD |
| Oral | | | | | | | | | | |
| Dialect | 5 | 8.5 | 2.0 | 16.0 | 2.7 | 4 | 14.8 | 3.2 | 17.5 | 2.9 |
| Standard English | 3 | 8.3 | 3.4 | 23.0 | 2.0 | 3 | 14.7 | 2.4 | 17.0 | 1.0 |
| Non-Oral | | | | | | | | | | |
| Dialect | 4 | 10.3 | 1.9 | 20.3 | 3.8 | 4 | 13.3 | 3.0 | 15.3 | 2.4 |
| Standard English | 5 | 7.8 | 2.8 | 21.6 | 5.6 | 4 | 15.3 | 3.4 | 13.8 | 2.7 |

### Table 2

### Analysis of Covariance for Posttest
(with Pretest as Covariate)

| | Experiment I | | | Experiment II | | |
|---|---|---|---|---|---|---|
| Source | df | MS | F | df | MS | F |
| Oral-Non-Oral (A) | 1 | 4.8 | .31 | 1 | 25.0 | 4.11 |
| Dialect-Standard (B) | 1 | 84.3 | 5.47* | 1 | 5.5 | .91 |
| A x B | 1 | 19.8 | 1.29 | 1 | 2.1 | .35 |
| $\text{Error}_W$ | 12 | 15.4 | | 10 | 6.1 | |

*$p < .05$

# Appendix A

Program: ORIENTATION

Materials: Individual booklets and special marking pens

| Frame Number | Commentary |
|---|---|
| 1 | Good morning, boys and girls. Today we're going to look at some picture books. Watch and do just what the teacher does.....<br>This is a circle. Watch the teacher make a mark in the circle. It turns purple. That means the mark was in the right place. Pick up your pens and make one mark in the circle in your book. Go ahead, mark it. If it turned purple, you marked the right place. It it didn't turn purple, try again... When you hear this bell, turn to the next page. BELL<br>The bell means turn the page. |
| 2 | Mark the circle on the cat. Only mark inside the circle - just like the teacher did. BELL<br>You heard the bell; turn the page. |
| 3 | Here's a cat and a boat. Mark the circle on the cat. If you got a purple mark, you're right. BELL<br>Turn the page. |
| 4 | Mark the circle on the cat. BELL |
| 5 | See the dog's tail? Mark it. BELL |
| 6 | Here's an elephant. One of his legs has a circle on it. Mark that circle. BELL |
| 7 | Here's a doll and a cat. The doll's arm has a circle on it. Mark the circle on the arm. |
| 8 | Here's a monkey and a bear. The monkey's leg has a circle. Mark the leg that has a circle. BELL |
| 9 | This time mark the boat. BELL |
| 10 | Now mark the circle on the plane. BELL |
| 11 | Mark the car. BELL |
| 12 | Mark the monkey. BELL |
| 13 | Mark the balloon. BELL |
| 14 | Mark the plane. BELL |

| Frame Number | Commentary |
|---|---|
| 15 | Mark the leg of the chair. BELL |
| 16 | Mark the boy's arm. BELL |
| 17 | This is a clue picture. It's a balloon. Find another balloon and mark it. BELL |
| 18 | This clue picture is an ice cream cone. Find another ice cream cone and mark it. BELL |
| 19 | The clue picture is a car. Mark the other car. BELL |
| 20 | Look at the clue picture. Find another picture like it. BELL |
| 21 | Look at the clue picture. Mark another picture just like it. BELL |
| 22 | Mark the boy. BELL |
| 23 | Mark the animal that says "bow-wow". BELL |
| 24 | Mark something that flies in the air. BELL |
|  | That's all for now, boys and girls. We'll see you tomorrow. |

Program: OCTOPUS PRETEST / POSTTEST

Materials: Individual booklets and crayons

| Frame Number | Commentary |
|---|---|
| 1 | Hello boys and girls. Today we're going to use crayons instead of pens. Take your crayon and make a mark in the circle on the cat. Go ahead, just like the teacher does. BELL<br>Turn the page when you hear the bell. |
| 2 | Now mark the dog. Go ahead. BELL<br>Remember... turn the page. |
| 3 | Mark the boat. BELL |
| 4 | Mark the octopus. BELL |
| 5 | Mark the tentacle. BELL |
| 6 | Mark the seahorse. BELL |

| Frame Number | Commentary |
|---|---|
| 7 | Mark the scallop. Go ahead and mark it. BELL |
| 8 | Mark the coral. BELL |
| 9 | Mark the crab. Go ahead and mark the crab. BELL |
| 10 | The crab has grown too big for his old home. Mark what he would like for a new place to live. BELL |
| 11 | Whrrrr. A noisy motor boat has scared the octopus. Mark what he does to hide. BELL |
| 12 | If an octopus were very, very hungry, mark what he would like to eat. BELL |
| 13 | The little seahorse has been swimming for a long time. Now he's very tired. Mark what he would hang from to rest. BELL |
| 14 | Mark what the octopus uses to put his favorite food in his mouth. BELL |
| 15 | Mark the place where the octopus goes when he wants to rest and be quiet. BELL |
| 16 thru 27 | Repeat frames 4 through 51 in Dialect. |
| 28 | Mark the ball. BELL |
| 29 | Mark the airplane. BELL |
| 30 | Mark the monkey. BELL |
| 31 | Mark the clown. BELL |
|  | That's all for today, children. Bye now. |

Program: OCTOPUS: Lesson 1

Materials: Individual booklets with special marking pens and large pictures.

1 Hello boys and girls. I want you to meet some friends of mine. This is Captain Nemo. He's the captain of a submarine.

2 And this is Susie.

Note.—The Oral and Non-Oral grograms were identical, except for the Non-Oral group, instead of being asked to say the word (e.g. "Say Octopus) they heard the word spoken twice (e.g. Octopus...Octopus).

| Frame Number | Commentary |
|---|---|
| 3 | Captain Nemo is taking Billy and Susie on a submarine ride. |
| 4 | A submarine is a big boat that can go under the water. The submarine goes down deep in the ocean where all the fish and other sea animals live. |
| 5 | When Captain Nemo and the children are safely inside, the submarine goes down, down, down; bubble, bubble, bubble. |
| 6 | "Susie and Billy, come over here by the window," said Captain Nemo. "I'm going to tell you about some of the animals that live down here in the ocean." "That's a funny round window," said Susie. "That window is called a porthole," answered Captain Nemo. |
| 7 | "Gee what's that strange animal over there?" asked Billy. "That's an octopus," said Captain Nemo. Boys and girls: Look in your book. In your book you'll see all the things that Billy and Susie see. You'll see an octopus too. Mark the circle by the octopus with your pen. (Say: Octopus.) When you hear the bell turn the page. BELL |
| 8 | "There's the octopus," shouted Billy, "over there by the rocks." "That's right," said Captain Nemo. "The octopus likes it down in the ocean by the rocks because it's so nice and cool." Now boys and girls, mark the octopus in your book. (Say: Octopus) BELL |
| 9 | Put your finger on the clue picture and mark another picture just like it. (Say Octopus) Remember if it turns purple, you marked the right one. BELL |
| 10 | "Gosh, look at the octopus now," said Susie. "It looks like he's walking." "He is," chuckled Captain Nemo. "He's walking on his tentacles just like you walk on your legs." Look at the clue picture and mark another picture just like it. (Say: Octopus.) BELL |
| 11 | "Captian Nemo, what are tentacles?" asked Susie. "Tentacles are what he walks on. The octopus doesn't have legs like you have and he doesn't have arms." You mark a tentacle. (Say: Tentacle.) BELL |
| 12 | "Gee, he must not get tired much when he goes for walks," said Billy. "Look at all the tentacles he has to walk on." Mark one of his tentacles. (Say: Tentacle.) BELL |
| 13 | "But doesn't he ever get tired of walking?? asked Susie. "Well, when he does," answered Captain Nemo, "he just sits down on a rock and spreads his tentacles all around him." Mark one of the octopus' tentacles. (Say: Tentacle.) BELL |
| 14 | "Look! There he goes! shouted Billy. "He's moving away from us." Look at the clue picture and mark another picture just like it. (Say: Octopus.) BELL |

| Frame Number | Commentary |
|---|---|
| 15 | "Yep, there he goes walking away on his tentacles," said Susie. Mark what the octopus uses to walk. (Say: Tentacle.) BELL |
| 16 | "I wonder where he's going," said Billy. "Probably to get some food," said Captain Nemo. "Susie, do you know what the octopus likes to eat?.... Scallops." Here is a picture of a scallop the octopus would like to eat. Mark the scallop. (Say: Scallop.) BELL |
| 17 | "The octopus hunts for scallops near where he lives," said Captain Nemo. Mark the scallop. (Say: Scallop.) BELL |
| 18 | "Hey, I see some scallops over there," yelled Billy. "I bet they're the ones he's going to eat." Look at the clue picture and mark another picture just like it. (Say: Scallop.) BELL |
| 19 | "He must really be in a hurry. Look at that octopus go," said Susie. Mark the optopus' tentacle. (Say:Tentacle.) BELL |
| 20 | "He's getting close to the scallops," yelled Billy. Here are the scallops on your page. (Say: Scallops.) BELL |
| 21 | "Look! The octopus is reaching out with one of his tentacles to grab a scallop," said Captain Nemo. This shows the octopus using his tentacle to grab a scallop. Find another octopus and mark one of his tentacles. (Say: Tentacle.) BELL |
| 22 | "He sure must like scallops," said Susie. "Look at all the scallops he's grabbing." Mark what the octopus grabbed. (Say:Scallops) BELL |
| 23 | "Hey... that octopus is going to sit on the rock to eat the scallops," said Billy. Mark the optopus. (Say: Octopus.) BELL |
| 24 | "Scallops sure are funny things to eat, aren't they? laughed Captain Nemo. "They're very soft on the inside, but they have two hard shells on the outside. The best part of the scallop is inside the two shells." In your book is a picture of a scallop. Mark it. (Say: Scallop.) BELL |
| 25 | "Captain Nemo, how is the octopus going to get to the good part inside the two shells?" asked Billy. "The octopus has to pull them apart with his tentacles," said Captain Nemo. "Look, you can see him using his tentacles now." Mark the octopus' tentacles. (Say: Tentacles.) BELL |
| 26 | "Boy, he sure is eating them fast," said Susie. "Scallops must be his favorite food." Mark the octopus' favorite food. (Say: Scallops.) BELL |

| Frame Number | Commentary |
|---|---|
| 27 | "Oh-oh, here comes another octopus," shouted Billy. Mark the Octopus. (Say: Octopus.) BELL |
| 28 | "Now the octopus is sitting down on the rock and speading his tentacles around him," said Susie. Mark one of the octopus' tentacles. (Say: Tentacle.) BELL |
| 29 | "I wonder if he wants some scallops too," said Susie. "Maybe he's hungry for some scallops." Mark the scallops. (Say: Scallops.) BELL |
| 30 | "Susie, do you suppose he is going to share some of his scallops with the other octopus?" asked Billy. "Yes, he is," Susie answered. "The other octopus is reaching out a tentacle to take some of the scallops." Mark what the octopus uses to grab the scallop with. (Say: Tentacle.) BELL |
| 31 | "Look, the other octopus is going over to the rock to eat." said Billy. Mark what the two octopuses are eating. (Say: Scallops.) BELL |
| 32 | "Golly, he's finished already," said Susie. "There he goes... he's moving away on his tentacles." Mark who's moving away. (Say: Octopus.) BELL |
| 33 | "I guess those octopuses don't eat the shells at all, do they," said Billy. "Look at all the empty scallop shells they left behind." Mark what the octopuses like to eat. (Say: Scallops.) BELL |
| 34 | "You children must be hungry," said Captain Nemo. "Why don't we to get some food. Let's say goodbuye to the octupus now." Mark the octopus. (Say: Octopus.) BELL |
| 35 | "Who-whee," shouted Susie. "It looks like the octopus is waving his tentacle goodbye." Mark the tentacle. (Say: Tentacle.) BELL |
| 36 | "Gee, we had fun," both children hollered as the submarine went back up to the surface. "Can we come back again?" "Sure," answered Captain Nemo. "Come back tomorrow." |

Program: OCTOPUS: Lesson 2

Materials: Children's stick cards; large picture cards

1 Good morning boys and girls.. We're going to play a game today. In front of you are three cards that you will use for the game. I'm going to hold up a card. Then I'm going to ask you to hold up a card. Now listen carefully and do just as I tell you to do.

| Frame Number | Commentary |
|---|---|
| 1 (cont'd) | I'm holding up a picture of a dog. Look at my picture. Now look at your cards, and hold up a picture just like mine. That's right; you held up the picture of a dog. (Say: Dog.) Now put your card down. |
| 2 | Now I am holding up a picture of a boat. Look at my picture. Now look at your cards and hold up a picture just like mine. That's right; you held up the picture of a boat. (Say: Boat.) Now put your card down. |
| 3 | Now I'm holding up a picture of a plane. Look at my picture. Now look at your cards, and hold up a picture just like mine. That's right; you held up the picture of a plane. (Say: Plane.) Now put your card down. |
| 4 | Now let's play this game a little faster....okay? Remember, listen very carefully to what I tell you. I'm holding up a boat. Now you hold up a boat. (Say: Boat.) Put down your card. |
| 5 | I'm holding up a dog. Now you hold up a dog. Now point to the dog's tail. (Say: Tail.) Put down your card. |
| 6 | I'm holding up a plane. Now you hold up a plane. (Say: Plane.) Cards down. |
| 7 | See the picture I'm holding up. You hold up a picture just like it. That's right. We're holding up the picture of a plane. (Say: Plane.) Cards down. |
| 8 | See the picture I'm holding up. You hold up a picture just like it. That's right. We're holding up a picture of a boat. (Say: Boat.) Cards down. |
| 9 | See the picture I'm holding up? You hold up a picture just like it. That's right. We're holding up the picture of a dog. (Say: Dog.) Cards down. |
| 10 | Hold up the picture of something that flies in the air. That's right. We held up the picture of the plane. (Say: Plane.) Cards down. |
| 11 | Hold up the picture of something that goes "Bow-Wow." That's right. We held up the picture of the dog. (Say: Dog.) Cards down. |
| 12 | Hold up the picture of something that floats in the water. That's right. We held up the picture of the boat. (Say: Boat.) Cards down. |
| 13 | Now we'll give you some new cards and we'll play this game again. Now hold up an octopus. (Say: Octopus) Cards down. |

| Frame Number | Commentary |
|---|---|
| 14 | Hold up a tentacle. (Say: Tentacle.) Cards down. |
| 15 | Hold up a scallop. (Say: Scallop.) Cards down. |
|  | That's fine, everybody. Now I'm going to tell you a story. When I tell you to hold up your cards, hold them up just like we did in the game. Is everyone ready? O.K. |
| 16 | Let's pretend we're going down deep in the ocean on a submarine ride. Is everyone sitting down and ready to go? Right in front of you is a big round window. If you watch very carefully through the window you will see many wonderful things. Down we go into the ocean....bubble, bubble, bubble. |
| 17 | It's nice and clear down here today so we can have a good view of everything around us. |
| 18 | Now we're passing a pile of rocks. Look! I wonder who that animal is hiding in the rocks? Why, it's an octopus. |
| 19 | Hold up your card that shows who's hiding in the rocks. That's right. An octopus. (Say: Octopus.) Cards down. |
| 20 | This octopus is resting in his hiding hole among the rocks. He always goes to his hiding hole when he is tired because that is his home. The hiding hole is also where the octopus eats. Sometimes when the octopus is hiding in his hole he sees some food float by. If you remember, the octopus loves to eat scallops. |
| 21 | Hold up your card that shows what an octopus loves to eat. (Say: Scallop.) Cards down. |
| 22 | The octopus reaches out with one of his tentacles and grabs the scallop that's floating past. |
| 23 | Hold up your card that shows what an octopus grabs his food with. (Say: Tentacle.) Cards down. |
| 24 | See, there he is now....sitting in his hiding hole in the rocks ready to eat his scallops. You remember that the soft part of the scallop that's good to eat is between the two shells. That's why the octopus has to pull the two scallop shells apart... to get to the food inside. |
| 25 | Look at all the empty scallop shells around the octopus' hole. He certainly had a big dinner. |
| 26 | I bet he must be tired now. Look at him.... he's resting in his hiding hole. |

| Frame Number | Commentary |
|---|---|
| 27 | Why look who's coming toward us now! It's one of the biggest fish I've ever seen! Oh-oh, it's going over towards the octopus. Oh! I hope it doesn't go in his hiding hole. That could be awful! Oh, no! That big fish has surprised the octopus, and now the octopus is scared. |
| 28 | When the octopus is scared he looks different. Now he has big black and white lines on him. Those lines are called stripes. The octopus has stripes on him when he is scared. |
| 29 | Look! The octopus is swimming away from us. He's getting away from the big fish. Boy, he can really go fast when he's scared. |
| 30 | Hold up the card that shows who is swimming away. (Say: Octopus) Cards down. |
| 31 | That big fish is still following the octopus. I wonder what the octopus can do now. Let's follow him and see. Why, look.... the octopus is squirting out some black ink. The ink looks just like dark water. When he wants to hide, the octopus squirts ink out of a special little place he has. |
| 32 | Now the big fish can't see the octopus. You can't see him either because he's hiding behind all that black ink he's squirting out. That octopus certainly is lucky.... not all animals can squirt out black ink when they want to hide. |
| 33 | Whew! That was a close one. The big fish is swimming away now. I guess he's given up. |
| 34 | Sometimes the octopus is scared by other things besides big fish. A boat might scare him. |
| 35 | A diver might scare him. |
| 36 | Even another octopus might scare him. If he does get scared though, we know what he will do. First, he will get big black and white stripes on him. Then, the octopus will squirt out some ink so that he can hide himself. |
| 37 | The poor octopus.... he must be very tired after being chased by that big fish. He probably wants to go home and rest. |
| 38 | You know where he's going.... back to his favorite place, the hiding hole. There he is now.... swimming into his hiding hole. Now he's ready for a nice long rest. He has his tentacles spread out all around him. |
| 39 | Hold up the card that shows the octopus's tentacle. (Say: Tentacle.) Cards down.<br>Let's leave him now.... we'll come back another day. |

# Project II

## Sub-Cultural Determinants of Cooperative and Competitive Behavior

Principal Investigator

Millard Madsen, Department of Psychology

| Research Assistants | Laboratory Assistant |
|---|---|
| Linden Nelson | Ricki Sion |
| Ariella Shapira | |

Research evidence indicates that need for achievement is in part a function of cultural and social class variables, but there is no consensus as to whether there is a difference in the motivational value of competition as compared to cooperation with children from middle or lower socioeconomic groups. The following three studies attempt to assess the nature of cooperative and competitive behavior of young children in different socioeconomic classes.

# Cooperative and Competitive Behavior of Pre-school Children as a Function of Reward Condition, Sex, and Ethnic Background.

There seems to be a generally accepted belief that patterns of cooperation and competition are a function of cultural and social class variables. Greenberg (1932) found some competition in two-year-old underprivileged Viennese children, while Leuba (1933) found little competition in an American middle-class sample until age four. McKee and Leader (1955) reported that low-status preschool children were more likely to be rated as showing competitive behavior than high status children. These findings seem to contradict what could be expected on the basis of recent research on social class and achievement motivation, as well as with the view of some current writers on cultural deprivation. Riessman (1962) states that the "cooperativeness and mutual aid that mark the extended family" are characteristic of the underprivileged and constitute a major asset that should be considered in educational planning. Strom (1965) emphasizes that middle-class children are more apt to achieve via individual competition than the group-centered lower class child. Neither of the above authors, however, provide any experimental documentation for their conclusions. The reason may be that very little experimental work has been carried out in the United States on ethnic and social class differences in the cooperative vs. competitive motivation of children.

By contrast, anthropologists (e.g. Mead, 1937) have long been concerned with the cooperation-competition continuum in descriptive accounts of other cultures. Whiting (1963) contains frequent references to observations of cooperative and competitive behavior. Other investigators (e.g. Anderson, 1937, Chittenden, 1942, and Stendler, Damrin, and Haines, 1951) have studied competitive-cooperative behavior in individual and group reward conditions. However, many of these investigations have been open to criticism in that (1) objective recording measures were not used; (2) the exact nature of competitive responses was not specified; and (3) the ethnic background of the samples was not always given.

In the present study, the cooperative-competitive behavior of young children from three ethnic groups within the same socioeconomic class was investigated, using a new device for obtaining immediate and objective measurement in a controlled, social interaction situation. Pairs of Project Head Start children played a rope pulling game requiring social interaction in order to win prizes. Behavior such that one child pursued his own progress at the expense of the other member of the pair was defined as competition. If each child actively pursued his own progress but in such a way that the progress of both children was facilitated, their behavior was defined as cooperation. The study investigated the effects of individual vs. group reward on the social interaction of preschool children, by sex and ethnic groupings.

## Method

### Subjects.

A total of 36 pairs of children from five Project Head Start centers in the Los Angeles area were matched for age and sex. Six pairs of boys and six pairs of girls were tested from each of three ethnic groups: Mexican-American, Negro, and Caucasian, with mean C.A. of 4.9, 4.6, and 5.3, respectively. Within each ethnic group, the age range was approximately 1.3 years. All children had attended the Head Start program for from one to twelve months, with the older children having attended the longest.

### Apparatus.

The game involved two children, pulling a rope 46 inches long, with eleven one-and-three-fourths-inch wooden balls, strung at various intervals over 30 inches of the rope, through a two-inch diameter opening in a movable block of transparent plastic mounted at the top of a wooden ramp. The ramp and plastic block were attached to a wooden structure that was clamped onto the top of a small table. (See Figure 1.)

- - - - - - - - - - - - - - -

Insert Figure 1 about here

- - - - - - - - - - - - - - -

There were two sets of rope-and-ball sequences, one for each child. The ramp had dividers to prevent the ropes from tangling before reaching the opening. Whenever the ropes were pulled so that two balls arrived at the opening simultaneously, the progress of the game was temporarily blocked. When the pull on the ropes was lessened, the balls slid back down the ramp thus ending the blocking. When the movement of the balls through the opening was halted, the pressure against the plastic block activated an electric counter and timer which automatically recorded the number of such blocks as well as the accumulated blocking time for each trial. If after eleven seconds neither child had succeeded in pulling all the balls through the opening, a buzzer sounded and the trial was terminated. Prizes were inexpensive trinkets such as rings, plastic cars, figures, etc.

### Procedure and Instructions:

Each pair of children was taken from the classroom to a quiet room for the game. All pairs were given the following instructions: "This is a game where you may win prizes which you may keep. Whenever you win, we will put a prize in this bag that has your name on it. You play the game by pulling ropes like this." The examiner demonstrated the procedure by first pulling one rope, then both ropes together. Then continued: "You start pulling the ropes when I say go, and in order to win you have to pull your rope all the way through the hole before you hear the buzzer. Let me show you how the buzzer works. (E demonstrated the buzzer). When the buzzer sounds I will stop the game like this. Now I will tell you how you can win prizes."

Half of the Ss in each ethnic-sex category were given instructions for the individual reward condition first, and half were given instructions for the group reward condition first, as follows:

Individual reward condition: "In this game only one person can win. There is only one prize each time. Whoever pulls his rope all the way through the hole first, before the other person pulls his rope all the way through and before the buzzer sounds, wins the prize. We will play the game more than once, but only one person can win each time. When I say go, you may start pulling."

Group reward condition: "In this game, both of you can win a prize every time. Everybody who pulls his rope all the way through the hole before the buzzer sounds, wins a prize. When I say go, you may start pulling."

Between conditions, each pair was told: "Now we are going to change the game. Now you don't have to be first (or you have to be first) in order to win a prize."

A trial began when E said go, and the switch for the 11 second time-delay relay buzzer was activated. A trial was completed when one child pulled the entire length of his rope through the opening. Whenever a trial lasted 11 seconds, the buzzer sounded and E ended the game for that trial. The Ss were reminded of the instructions before every trial. There were six trials in each condition. The number of blocks, the accumulated blocking time, the total time to completion of each trial, and the number of balls remaining to be pulled through the opening at the end of each trial were recorded by E after every trial. Immediately after each trial the Ss were shown the prizes they had won for that trial.

After all the trials, Ss were given an opportunity to give and trade prizes; and E gave additional prizes so that the rewards were evenly distributed.

Criteria for Rating Interactions.

Neither the total number of blocks (number of times balls blocked the opening) nor the total time of blocking for a trial is an adequate measure if taken alone. A low number of blocks may indicate that the Ss interacted slowly and non-assertively, that the Ss competed to the degree of refusing to release the balls when blocked, or that the Ss non-assertively maintained the blocks because they did not foresee the advantages of releasing the ropes. Similar possibilities existed if blocking time alone were considered. For this reason, the number of blocks, the accumulated blocking time, and the number of balls remaining to be pulled through the opening at the end of each trial had to be considered together in determining the kind of interaction that had occurred on each trial.

If the blocking time for a trial was high and if the number of blocks or activity on previous trials indicated that the Ss understood the principle of releasing the ropes in order to make progress, the interaction was considered to be competitive because the Ss must have been actively attempting to block each other and yet make progress individually. The following rule was followed: If the accumulated blocking time for the trial was over three seconds and in addition either (1) the number of blocks was 15 or more or (2) the pair had, on a previous single trial, pulled a total of 10 balls through the opening, the category "active competition" was assigned.

If the blocking time was low, it was concluded that the Ss were not trying to block each others progress and thus were acting non-competitively. If, in addition, the number of blocks was high, the Ss must have been actively pursuing progress (getting blocks) and yet willing to release the ropes when blocks occurred (thus low blocking time). The following rule was followed: If the accumulated blocking time for a trial was less than 2.5 seconds and in addition the number of blocks was 15 or more, the category assigned for the trial was "active cooperation."

The numerical limits in these rules were established previous to examination of the data and on the basis of blocking scores obtained by the Es when intentionally competing or cooperating on the task. Trials where the Ss behavior was non-assertive or simply did not fit into one of these categories were considered "other" in the following analysis.

## Results

Each pair of Ss was assigned an interaction category (cooperation, competition, or "other") for each trial. Table 1 shows the breakdown in assignment of interaction categories for the 36 pairs of Ss on each trial in both the individual and group reward conditions. Because of the somewhat arbitrary method of assigning interaction categories, comparison of the mean interaction scores for trials 1-6 within the individual or group reward conditions is not as meaningful as comparisons between conditions. That is, it cannot be concluded with much confidence that interactions within the individual reward condition were more competitive than cooperative. This is because the inter-

- - - - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - - - -

actions classified as "other" might include some "weak" cases of cooperative behavior. The comparison of scores between reward conditions is more meaningful. Although in the group reward condition the mean per trial incidence of cooperation is slightly greater and the incidence of competition is slightly less than in the individual reward condition, the real difference between conditions appears in the trend over trials for cooperative and competitive interactions. No trends are evident in the individual reward condition, but in the group reward condition the incidence of cooperation appears to increase from trial to trial and the incidence of competition appears to decrease. To test the hypothesis of no change in the percentage of cooperative interactions over trials in the group reward condition, the Q statistic was used (Winer, 1962, p. 139). A chi-square distribution was used to approximate the sampling distribution of the Q statistic. The data contradict the hypothesis of no change [$Q=68.2$, $\chi^2_{.99}(5)=15.1$]. The systematic increase in cooperation over trials in the group reward condition is statistically significant at the .01 level. Application of the same test to the changes in the incidence of competition in the group reward condition suggests that the decrease in competition is significant between the .05 and .10 levels [$Q=9.4$, $\chi^2_{.95}(5)=11.1$]. The major difference effects appear only in trials five and six. Each pair of Ss was given a score of 0, 1, or 2 for each interaction category, with the score for a particular interaction category being the total number of times the category had been assigned for trials five and six. There was one analysis of variance for cooperation scores and another for competition scores. Both analyses investigated the following factors: ethnic background (Mexican, Negro, or Caucasian), sex, condition (individual or group reward), and order (individual-group or group-individual reward).

The analysis of variance on cooperation scores found the ethnic factor to be significant at the .05 level ($F=3.5$, $df=2$) and the individual vs. group reward effect to be significant at the .01 level ($F=9$, $df=1$). Mexican-American children were cooperative on eight out of 48 trials, Caucasians on 11 of 48 trials, and Negroes on 19 of 48 trials. In the individual reward condition, 12 of the 72 trials were cooperative and in the group reward condition 26 of the 72 trials were cooperative. Only the ethnic x order and the order x sex x condition interactions were significant, but in no combination of effects were the above rank orders changed.

The analysis of variance of competition scores shows a significant effect at the .05 level for the ethnic variable (F=3.5, df=2). Negroes were competitive on eight of 48 trials, Mexican-Americans on 18 of 48 trials, and Caucasians on 24 of 48 trials. No significant interaction effects were found.

The number of trials in which no S completed the task and thus in which no one was rewarded is a measure of non-adaptive competition. This was particularly maladaptive in the group reward condition where both Ss could have been rewarded if they hadn't blocked each other's progress. In the individual reward condition, 16 of the 36 pairs had a total of 45 trials in which no one was rewarded; in the group reward condition 24 of the 36 pairs had a total of 56 trials in which no one received prizes.

## Discussion

The results suggest that the instructions "only one person can win" in the individual reward condition or "you can both win" in the group reward condition had little immediate effect on the cooperative-competitive behavior of these preschool children. However, in the group reward condition the children became more cooperative over trials and less competitive. By trials five and six the group reward children were significantly more cooperative and somewhat less competitive than children in the individual reward condition. It appears that the children's cognitive set for cooperative-competitive interaction was little affected by the instructions, but that through experience they either perceived the desirability of cooperating or were affected by the rewards so that cooperative behavior was reinforced in the group reward condition.

It should be noted that competitive behavior did not increase after the first trial in the individual reward condition even though competitive behavior was being reinforced. Perhaps the original cognitive set for the individual reward condition was competitive and thus the children were competitive from the first to the last. Since the children were just as competitive on the early trials in the group reward condition, the original cognitive set in the group reward condition must also have been competitive. It appears that a disposition to be competitive is more strongly acquired in these preschool children than a disposition to be cooperative.

The strength of this "set" to be competitive is evident in the fact that there was a higher incidence of trials (56) where no one was rewarded for the group reward condition than for the individual reward condition (45). This was true even though it was obviously maladaptive for S̲s to block each other's progress when it was possible for both to get prizes. Certainly some of the children were more interested in being first than in getting prizes. One Mexican-American girl continued to say, "Me first, me first, I was first, wasn't I?" after every trial in the group reward condition. Others said, "I beat", or "I won" even after being told by E̲ that both children had won. This suggests that for some preschool children achievement motivation is highly developed and that pride in winning may be more important than material rewards. It also seems likely, however, that the possibility of cooperating never occurred to many S̲s. They may have more fully acquired the interaction pattern of competition than that of cooperation.

The analysis of trials five and six in both reward conditions suggests a significant ethnic difference. The Negro children appear most cooperative and least competitive; the Mexican-American children appear least cooperative and rank second in competitiveness; the Caucasians appear most competitive and rank second in cooperativeness. While these ethnic differences may be open to question because of the differences in mean ages, there is no tendency for age and cooperation scores to correlate independent of ethnic groups. There was a positive correlation between age and competition scores within ethnic groups, but even among pairs of Ss matched for age, the same rank order differences in competition scores for ethnic groups listed above were maintained. The results seem to justify concluding that there are differences in patterns of cooperative-competitive interaction among ethnic groups. The Negro Head Start children were most cooperative and least competitive; the Mexican-American Head Start children were least cooperative; and the Caucasian children appeared most competitive. These findings are in line with those of Sampson and Kardush (1965) who found seven-to-eleven-year-old Negro pairs to be more collaborative and less competitive than Caucasian pairs on a non-zero-sum game.

Finally, the present study suggests that the new apparatus was sensitive to differences in cooperative-competitive behavior. In future investigations of ethnic variables and other correlates of cooperative behavior in preschool children, attempts will be made to compare new instruments for measuring cooperative behavior with the apparatus described here.

## References

Anderson, H. H. Domination and integration in the social behavior of young children in an experimental play situation. Genetic Psychology Monographs, 1937, 19, 341-408.

Chittenden, G. E. An experimental study in measuring and modifying assertive behavior in young children. Monographs of the Society for Research in Child Development, 1942, 7, (31).

Greenberg, P. J. Competition in children: An experimental study. American Journal of Psychology, 1932, 44, 221-248.

Leuba, C. An experimental study of rivalry in young children. Journal of Comparative Psychology, 1933, 16, 367-378.

McKee, J. P., & Leader, F. The relationship of socio-economic status and aggression to the competitive behavior of preschool children. Child Development, 1955, 26, 175-182.

Mead, M. Cooperation and competition among primitive peoples. New York: McGraw Hill, 1937.

Riessman, F. The culturally deprived child. New York: Harper and Row, 1962.

Sampson, E. E., & Kardush, M. Age, sex, class, and race differences in response to a two-person non-zero-sum game. Journal of Conflict Resolution, 1965, 9, 212-220.

Stendler, C., Damrin, D., & Haines, A. Studies in cooperation and competition: I. The effects of working for group and individual rewards on the social climate of children's groups. Journal of Genetic Psychology, 1951, 79, 173-197.

Strom, R. D. Teaching in the slum school. Columbus: Charles E. Merrill, Inc., 1965.

Whiting, B. (Ed.) Six cultures. New York: John Wiley, 1963.

Winer, B. J. Statistical principles in experimental research. New York: McGraw-Hill, 1962.

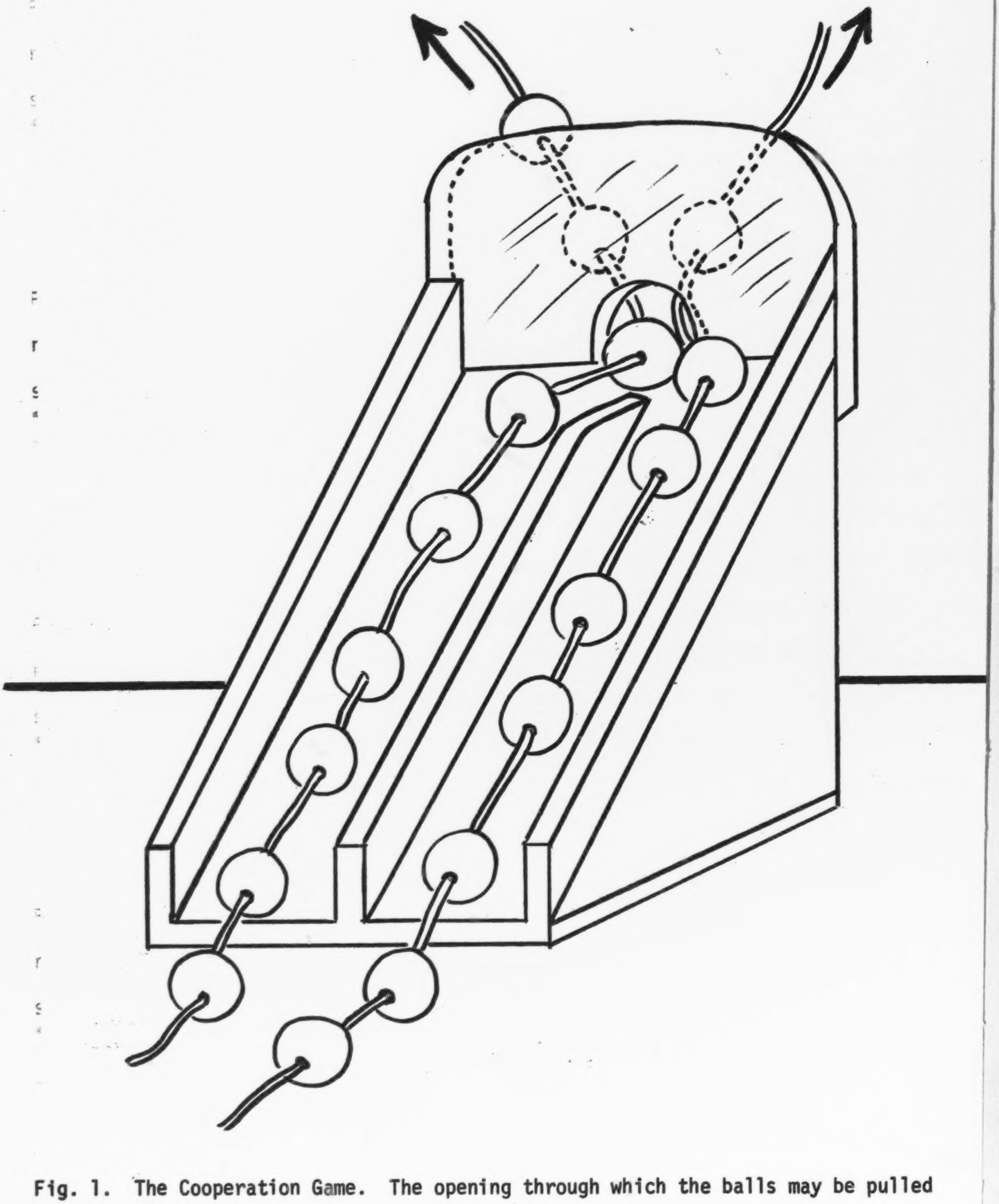

Fig. 1. The Cooperation Game. The opening through which the balls may be pulled is in a movable piece of plexiglass which activates a counter and timer whenever the balls are blocked at the opening.

Table 1

Cooperative or Competitive Interactions x Condition x Trial

| Reward Condition | Interaction Category | Trial | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | Mean |
| Individual Reward (N=36) | Cooperation | 5 | 8 | 6 | 8 | 5 | 7 | 6.5 |
| | Competition | 15 | 15 | 17 | 14 | 15 | 14 | 15.0 |
| | Other | 16 | 13 | 13 | 14 | 16 | 15 | 14.6 |
| Group Reward (N=36) | Cooperation | 4 | 5 | 7 | 9 | 12 | 14 | 8.5 |
| | Competition | 14 | 19 | 15 | 12 | 12 | 9 | 13.5 |
| | Other | 18 | 12 | 14 | 15 | 12 | 13 | 14.0 |

# Group vs individual reward contingencies as a measure of differences in cooperation and competition in preschool children of different socioeconomic backgrounds.

In an early study, Maller (1929) examined the cooperative and competitive behavior of children from three socioeconomic levels. His data indicated that competitive situations were more effective in stimulating work output than were cooperative situations for all social class groups.

McKee and Leader (1955), however, found that a greater percentage of low status preschool subjects showed competitive behavior in a free play situation compared to high status pairs. On the basis of this evidence, McKee and Leader suggested that "youngsters from lower socioeconomic levels have learned the desirability of successful competition through having to compete for a limited supply of material benefits", and that "those who are deprived of status are likely to seek it more vigorously than those who are not so deprived."

This view is inconsistent with what would be expected on the basis of research in social class and achievement motivation (McClelland, 1961), as well as with the view of some current writers on cultural deprivation. (Cf. Riessman, 1962, Strom, 1965, et al.) Romney and Romney (1963) investigated an agricultural, Indian-speaking community in southern Mexico and observed that the barrio children were much less aggressive and competitive than were children from the non-agricultural section of the village. They accounted for this finding by hypothesizing sub-cultural differences in child-rearing practices related to the development of effective competition.

Madsen (1967) compared children representative of three sub-cultural groups in southern Mexico on experimental tasks designed to assess cooperative vs. competitive motivation in seven-to-nine-year-old children. Indian village children demonstrated significantly more cooperation and less competition than did urban middle class children. Urban lower class children, however, responded more like the village children than like the urban middle class children. The question therefore remains as to whether competitive or cooperative behavior is characteristic of socioeconomic class, a particular subcultural identification, or both.

In the present study, the cooperative and competitive behavior of four-to-five-year-old children of three ethnic groups, each at two socioeconomic levels,was assessed, using an apparatus which permitted objective definition and measurement of this variable.

## Method

### Subjects

Two hundred and forty children from the Los Angeles area participated in the study. One half of these subjects were enrolled in Project Head Start centers. Of these, 40 Ss were Negro, 40 were Mexican-American, and 40 were Caucasian. The Head Start Ss were considered as representative of low economic group membership in that only families whose income is less than $3,000 a year are eligible to enroll their children in the program. The other 120 Ss were enrolled in Children's Centers, which are state supported facilities where approximately 80% of the children are from single-parent homes. While the economic level may not be appreciably superior to that of the Head Start group, the fact that the parent, who is usually the mother, is working means that this is a more upwardly mobile group, and thus more representative of the middle-class population. The three ethnic groups in both categories were represented equally by boys and girls.

Apparatus.

The apparatus was identical to that used by Madsen (1967). This consists of a board 18" square with a small eyelet screwed into each corner. The device enables a child stationed at each corner of the board to pull a string through the eyelet towards himself. The four strings are fastened to a movable object in the center of the board. The object is a metal weight which serves as a support for a ball point pen filler. The pen protrudes downwards through a hole in the center of the weight and constant downward pressure is maintained by an elastic band. Thus, by covering the board with a piece of paper for each trial, a permanent record of the responses of each set of Ss is obtained. Circles were drawn on each corner of these record sheets to identify the goal circle for each S.

Procedure.

Four Ss of the same sex, economic group, and ethnic group were introduced to the experimental game. The experimenter pulled the string and showed Ss that by doing so a line was drawn on the paper. The name of each S was then written in the circle in his corner. Each S was then told that he would receive a prize when the pen drew a line across his circle. Prizes were given (trinkets) as soon as a circle was crossed. At the conclusion of each trial the pen was returned to the center of the board for the next trial. Each group of four Ss received 20 trials, with four trials recorded on each sheet. If, on a given trial, a circle was not crossed within one minute, the trial was stopped and no S received a prize.

## Results

Any line that deviated more than two inches from a straight path from the center of the board, or reversed direction within those limits, was considered to be a competitive response. Other lines were considered non-competitive in that the children were not pulling against each other. The mean non-competitive responses per subject category are indicated in Table 1. A 2 x 2 x 3 (economic class x sex x ethnic group) analysis of variance indicated no significant main effects of class, sex, or ethnic background. In an analysis of simple main effects, the only significant difference was that Mexican-American boys were less competitive than Mexican-American girls ($F=4.20$, $P<.05$), and that Mexican-American boys were less competitive than Negro boys ($F=5.7$, $P<.05$) and Negro girls ($F=4.62$, $P<.05$).

- - - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - - -

## Discussion

The results did not indicate any substantial relationship between the socioeconomic factor and degree of competitiveness. Ethnic background was found to affect competitive behavior in only a partial way in that it interacted with sex. Mexican-American boys were less competitive than Mexican-American girls, as well as Negro and Caucasian boys and girls. The fact that the vast majority of responses of four-year-old children from all ethnic and socioeconomic categories were competitive suggests that, as Piaget holds, there is a strong cognitive component in competitive behavior and that this behavior does not emerge, regardless of subcultural differences, until a later age. In other words, four-year-old children may not have the cognitive capacity to cooperate over trials on the task used in this investigation. That this may be the case is supported by a replication study (Shapira and Madsen, 1967) carried out on an Israeli kibbutz. In this setting, where cooperative behavior is reinforced at a very early age, four-year-old children were consistently competitive, while six-year-olds were very cooperative. It seems that an interesting line of investigation would be a developmental study to determine at what ages differences in cooperation and competition become apparent in different ethnic and socioeconomic groups. Further work is also needed to determine whether competitive situations do actually produce, as Maller contends, more effective learning. In the light of such research, interventions designed to facilitate the emergence of the desired types of social interaction at an early age may be suggested.

## References

Madsen, M. C. Cooperative and competitive motivation of children in three Mexican sub-cultures. Psychological Reports, 1967, 20, 1307-1320.

Maller, J. B. Cooperation and competition, an experimental study of motivation. Teachers College Contributions to Education, 1929, (No. 384).

McClelland, D. C. The achieving society. Princeton: Van Nostrand, 1961.

McKee, J. P., & Leader, F. The relationship of socio-economic status and aggression to the competitive behavior of preschool children. Child Development, 1955, 26, 175-182.

Riessman, F. The culturally deprived child. New York: Harper & Row, 1962.

Romney, K., & Romney, R. The Mixtecans of Juxtlahuaca, Mexico. In B. Whiting (Ed.), Six cultures. New York: John Wiley, 1963.

Shapira, A., & Madsen, M. Differences in competition and cooperation with kibbutz and urban Israeli children. Report submitted for University of California, Los Angeles Head Start Evaluation and Research Center, November 1967.

Strom, R. D. Teaching in the slum schools. Columbus: Charles E. Merrill, Inc., 1965.

Table 1

Mean Non-Competitive Trials per Subject Category

| | Head Start | | Day Care | |
|---|---|---|---|---|
| | Female | Male | Female | Male |
| Negro | .4 | .2 | 1.2 | .6 |
| Mexican-American | 1.2 | 4.4 | .8 | 4.8 |
| Caucasian | .4 | 1.0 | 2.0 | 3.0 |

## A cross-cultural comparison of cooperative and competitive behavior in kubbutz and urban children in Israel

In an experimental study of subcultural differences in competitive and cooperative behavior, Madsen (1967) found that both rural and urban poor children in Mexico were dramatically more cooperative than Mexican urban middle class children. An attempt was made to account for these differences in performance on experimental tasks by reference to the environmental milieu in which the different subcultural groups had developed. The study reported here was carried out in Israel and used the same techniques to compare two other subcultural groups: children from agricultural social communes called kibbutzim and those from an urban environment.

Children in an Israeli urban middle class community are encouraged by parents and teachers to achieve and succeed. Competition is an acceptable means of arriving at this goal. In the kibbutz, on the other hand, children are prepared from an early age to cooperate and work as a group, in keeping with the objectives of communal living. Spiro (1958) found, through questionnaires given to parents in the kibbutz, that generosity and cooperation were the most frequently rewarded behaviors, while selfishness and failure to cooperate were among the behaviors most frequently punished. He also found that parents and nurses used the technique of rewarding for success and punishing for failure in less than five percent of the total socialization process.

The formal teaching methods in the kibbutz are also noted for their minimal emphasis on competitive goals and techniques. Grades and examinations are viewed as unnecessary or even undesirable. Competition, with all its punitive aspects, is far less intense in the classroom of the kibbutz than in that of the city. Not only do the agents of socialization avoid inducing a favorable set toward competition, but also the children themselves develop an attitude against competition. Spiro found that only one out of 28 students saw himself or his peers as being competitively motivated. By far the majority of the students said that their desire was primarily to become equal to their peers or, as Rabin (1965) observed, to raise the achievement level of their group as a whole. Generally, kibbutz children do not accept competition as a socially desirable norm and dislike those who try to excel over members of their own group. This anti-competition attitude is so strong that, according to some teachers, students are ashamed of being consistently at the top of the class. Spiro also found that these cooperative attitudes and behaviors increase with age, concomitant with a decrease in competitive motivation.

In line with these basic differences in child-rearing practices and values, it was hypothesized that kibbutz children would be more cooperative than urban middle class children when playing a social-interaction game with their peers.

## Method

### Subjects

The kibbutz sample included 40 children, 20 boys and 20 girls, ages ranging from six to 10 years, with a mean age of eight years. Children from three different kibbutzim were included: Beit Zerah (in the Jordan Valley), Beit Hashita (in the Yisrael Valley), and Ein Hahoresh (in the Sharon). Both Ein Hahoresh and Beit Zerah belong to the Hashomer Hatzair, a radical socialist movement which is ideologically the most puritanical of all kibbutz movements in Israel. Beit Hashita belongs to Hakibbutz Hameuhad, a relatively more moderate ideological movement. All of the kibbutz children who played the experimental game knew the children with whom they participated.

They were usually from the same kvutza, a group within a kibbutz comprised of children who spend almost all their time together.

The city sample consisted of 40 children, 20 boys and 20 girls, ages ranging from six to 10 years, with a mean age of eight years. These children were from Mount Carmel, an upper middle class community in which most people have a relatively high income. The children, who were spending their vacation at a summer day camp, had already been together for several weeks and therefore knew each other quite well. This particular group of urban children was chosen because they were quite similar to kibbutz children in intelligence and opportunities for development.

In both samples, by far the majority of the children had been born in Israel.

### Apparatus

The Madsen Cooperation Board was used. (See Figure 1.) This board

- - - - - - - - - - - - - - -

Insert Figure 1 about here.

- - - - - - - - - - - - - - -

is 18 in. square with an eyelet fastened to each of the four corners. Strings strung through each eyelet are connected to a metal weight which serves as a holder for a ball point pen filler. A sheet of paper is placed on the board for each trial, thus recording the movement of the pen as Ss pull their strings. Because the string passes through the eyelets, any individual child can pull the pen only toward himself. In order to draw a line through the other three circles, all the children in the game must work together. The essential features of the apparatus and position of circles to be crossed can be seen in Figure 1.

## Experiment I.

The purpose of this experiment was to train the Ss in playing the game in a cooperative manner, so that the children would know how to play cooperatively under the individual reward condition, if motivated to do so. It would also reveal whether there was any pre-existing tendency to behave competitively or cooperatively.

### Procedure

Two treatment conditions, Group Reward (GR) and Individual Reward (IR), were compared over three trials. In trials 1-3, (GR), all four children received a prize as soon as the group was able to draw a line through the four circles within the time allowed. In trials 4-6, (IR), each of the four players had his own circle and would receive a prize only when his circle was crossed. The instructions were such that the children could decide whether to compete or cooperate in either condition.

A group of four children of the same sex and approximately the same age were taken from the group (either kibbutz or city) into a separate room. The experimental board was set on a low table. The four children were seated at the four corners of the board and told that they were going to play a game. The children were instructed to hold on to the handles, one in each hand, and to listen to the instructions of the game.

### Instructions for Trials 1-3.

> "As you can see, when we pull the strings, the pen draws lines. In this game we are going to pull the strings and draw lines, but in a special way. The aim of the game is for you to draw a line over the four circles within one minute. If you succeed in doing this, each one of you will get a prize. If you cover the four circles twice, everyone will get

> two prizes, and so on. But if you cover less than four circles no one will get a prize.
>
> You may talk to each other, but are not allowed to touch another child's string or handle. Are there any questions?"

While the children were playing the game, the E announced the number of circles crossed and also announced when a round of four circles was completed. When a minute was up, the children were stopped, and the E announced and recorded the number of rounds and extra circles the children had crossed.

At this point each child was given a paper bag with his name and prizes were given out in accordance with the number of rounds completed. Trial 1 was completed and a new sheet of paper was attached to the board. The procedure was repeated for the second and third trials.

## Instructions for Trials 4-6

> "Now the game is going to be somewhat different. Now every one of you gets his own circle. This is David's circle," (E writes name on a circle to the right of David). "This is Ron's circle," etc. "Now, when the pen draws a line across one of the circles, the child whose name is in the circle gets a prize. When it crosses David's circle, David gets a prize; when it crosses Ron's circle, Ron gets a prize,and so on. You will have one minute to play before I stop you. Are there any questions?"

During this trial, E announced every time a circle was crossed. When the trial was over, the E announced and recorded for each child, the number of times his circle had been crossed. Prizes were given out accordingly. Trials five and six followed the same procedure as trial four.

## Results

The number of circles crossed on each trial was the dependent variable. Since any competitive behavior reduced the possible number of circles a group could cross, a higher number of circles indicated a higher degree of cooperation.

Table 1 shows the average number of circles (over 3 trials)

- - - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - - -

crossed by the two subcultural samples under the group and individual reward conditions. The difference between the groups under the IR condition was significant at the .01 level, with kibbutz children improving under this condition while city children showed a sharp decrease ($p < .005$) in performance. No significant difference was found between city and kibbutz groups under the GR condition.

In examining the change in performance over the two conditions, it was found that only two kibbutz groups decreased in performance, seven groups improved, and one remained the same. Among the city groups, nine decreased and only one improved. This difference is significant at the .005 level.

Figure 2 shows the performance of the two groups on Trials one

- - - - - - - - - - - - - - -

Insert Figure 2 about here

- - - - - - - - - - - - - - -

through six. As can be seen, both groups crossed fewer circles on Trial four, when individual reward was introduced. While the average drop from Trial three to Trial four for city groups was 10.1 circles, the average drop in the kibbutz was 5.6 circles. This difference in amount of decrease was significant at the .05 level. It also seems that this lowered performance occurred for different reasons. By Trial four, most city groups began competing, thus reducing drastically the number of circles crossed. The performance of the kibbutz groups, on the other hand, simply slowed down. The reason for this could have been either because they made an effort to avoid competition, or because they were adjusting to the new rules as if it were a different game. It can also be seen from Figure 2 that the kibbutz groups recovered on Trials five and six, whereas the city groups never regained the level of performance attained under the GR condition.

While the differences between the two groups were not significant under the GR condition trials, the kibbutz groups performed significantly better than city groups on all individual reward trials (Trial 4, $p < .01$; Trials 5 and 6, $p < .05$).

Table 2 shows the separate performance of males and females of the two groups under the two conditions. The same pattern of results occurs for both sexes. However, the difference between kibbutz and city groups under the IR condition is much greater for the boys. Urban boys cross 30.6 fewer circles than kibbutz boys whereas kibbutz girls show a difference of only 12.8 circles over urban girls under the individual reward condition. Evidently both kibbutz boys and girls continue to cooperate even when the rules reward individual competition.

- - - - - - - - - - - - -

Insert Table 2 about here

- - - - - - - - - - - - -

## Experiment II

The purpose of this experiment was to compare the behavior of kibbutz and city children in a situation where competition is an adaptive behavior. Since in this situation the circles were at the corners of the page, it was possible for a competitive child to win more prizes than the others by pulling the string sharply towards himself and drawing a line through his own circle.

## Procedure

The circles were drawn at the corners of the page so that each child had a circle directly in front of him. The following instructions were given:

> "As you see, the circles are now at the corners of the page. This time the game is somewhat different so listen carefully. Again every one has his own circle. (E writes each child's name in the circle closest to him.) Now, when the pen draws a line across the circle of one of the children, that child will get a prize. At this point, we shall stop the game and return the pen to the center of the page and begin again. We will do this four times without changing the page. Are there any questions?"

When a line was drawn across one of the circles, the E stopped the game and recorded the time of the trial and the order. The child whose circle was crossed received a prize. The same procedure was carried out for trials 2, 3, and 4. If no circle was crossed within a minute, E stopped the game and began a new trial.

When the experiment was over, E gave prizes to those children who had not won many during the game, so that all children received about the same number of prizes. Although the prizes were of little intrinsic value, (candy, gum, and small plastic charms) they were effective reinforcers as demonstrated by the children's eagerness to work for them.

## Results

Any line which passed through an individual circle, without deviating more than one inch from the direct path from the center starting point to the circle, and which did not reverse directions within those limits, was considered a non-competitive response. Lines which violated these criteria were considered competitive in that they indicated that children were pulling against each other.

Table 3 gives the average number of non-competitive responses per trial

Insert Table 3 about here

for the two groups, by sex.

Kibbutz groups had more non-competitive responses than urban groups (mean 2.6 vs. 1.4, respectively), but this difference only approaches significance ($t$ = 1.70 $p > .05 < .10$).

Most of the differences between kibbutz and city groups can be attributed to the fact that the city boys were more competitive than city girls, as well as both boys and girls from the kibbutzim.

## Discussion

The hypothesis that kibbutz children would show more cooperative behavior than city children in Israel, was confirmed. Under the individual reward condition, the kibbutz children showed performance superior to that of the city children. Since both groups had learned the task equally well, as evident by their similar performances under the group reward condition, differences in performance under the individual reward condition can be attributed to different types of motivational stress in urban and kibbutz environments. Thus, changes in instructions produced different behaviors in city children, but not kibbutz children. The slight improvement in performance for kibbutz groups under the individual reward condition probably reflects the effect of practice as the children continue to follow the cooperative techniques adoped under the group reward condition. Once reward was given out on an individual basis, city children changed the tactics they had used to obtain group rewards and began pulling towards themselves. Even though they obviously realized, after trials four and five, that these competitive procedures were not paying off for any of them, they were unable to stop their irrational competition.

Perhaps of greater interest is the fact that the children themselves did not enjoy the competition and wanted to change the rules. A number of children kept asking E not to write names on the circles, evidently realizing that as long as there were names on the circles they would continue to compete.

At times a child would suggest that they take turns, or help each other, but usually the other children refused. In some isolated cases, the children agreed to cooperate, but the instant one child pulled a little harder, cooperation broke down completely and they all started pulling towards themselves.

Among the kibbutz groups the picture was entirely different. When individual reward instructions were introduced, the first response of most of the groups was to set up rules for cooperation. Some examples of these responses were: "OK gang, let's go in turns", or "Let's help each other", or "We'll start here, then here, etc". Some groups asked E if they were allowed to help each other, or whether they could go in rounds like before. When E said they could do as they wished, they always decided upon cooperation. These children were very organized in their performance. They usually had decided the order before the trial began. During the game they were also very active in directing one another.

The kibbutz children were very eager to do well as a group, and tried their best to improve their performance on every subsequent trial. Some of the groups asked to compare their results with other groups and wanted to know what the best score had ever been. Such responses, indicate that a desire to achieve and to do well characterize these children, who do compete with other groups on the kibbutz, but not within the group. At the group level, they cooperate and work together as a team.

In most of the groups there was a great concern about equality in prizes. "Every one should get the same". They were so concerned about this that, in many cases, they rotated the starting point so that if they were stopped before a round was completed a different child would get the extra prize on each trial.

When, in some isolated cases, one of the children tried to compete against the others, the group usually restrained him.

In general, the results and observations indicate that when cooperative behavior was adaptive, children of the kibbutz were generally able to cooperate successfully for maximum performance, whereas urban children were usually not able to do so.

Romney and Romney (1963) in studying Mexican communities, reaches the popular conclusion that strong achievement orientation would necessarily involve competition. It seems that in the case of the kibbutz this does not hold. The children of the kibbutz are oriented towards high achievement, but yet learn to cooperate, even if at times this means giving up personal success for group success.

Many aspects of kibbutz life and collective education, are potentially competitive. The children of the kibbutz, more than those of the city, must compete for the nurses attention and affection, must compete for the toys they play with, etc. It is possible that because of this, the development of cooperative tendencies is so instrumental to proper functioning of the group, and that without such a development, conflict would be exceptionally severe.

In addition to the above study, 16 four-year-old kibbutz children, eight boys and eight girls, were given five trials under the individual reward condition. All four groups demonstrated strongly competitive behavior. No cooperation, no going in turns, no helping was evident. These results support Spiro's observation that cooperative play on the kibbutz is a function of age. It seems likely that children in the kibbutz are initially as strongly competitive as children in the city, but that after a certain age these tendencies are controlled or channeled into within-group cooperation. It is also possible that successful cooperation involves a level of cognitive development which has not yet emerged with the four-year-old child, but is evident with the six-year-old children. Both of these hypotheses warrent further investigation.

## References

Madsen, M. C. Cooperative and competitive motivation of children in three Mexican subcultures. Psychological Reports, 1967, 20, 1307-1320.

Rabin, A. I. Growing up in the kibbutz. New York: Springer Publishing Company, Inc., 1965.

Romney, K., & Romney, R. The Mixtecans of Juxtlahuaca, Mexico. In B. Whiting (Ed.), Six cultures. New York: Wiley, 1963. pp. 541-691.

Spiro, M. E. Children of the kibbutz. Cambridge: Harvard University Press, 1965.

Table 1

Total Number of Circles Crossed Under Group and Individual Reward Conditions for Kibbutz and Urban Children

| | Group Reward Trials | | | Individual Reward Trials | | | Total G. R. | Total I. R. |
|---|---|---|---|---|---|---|---|---|
| Group | 1 | 2 | 3 | 4 | 5 | 6 | 1-3 | 4-6 |
| Kibbutz (N = 40) | 6.7 | 9.7 | 14.3 | 8.7 | 13.4 | 14.0 | 30.9 | 36.1 |
| Urban (N = 40) | 5.7 | 9.6 | 12.1 | 2.0 | 5.2 | 6.2 | 27.4 | 13.4 |

Table 2

Number of Circles Crossed over 6 Trials, under 2 Reward Conditions, by Sex and Group

| Group | Females | | Males | |
|---|---|---|---|---|
| | Group | Individual | Group | Individual |
| Kibbutz | 31.0 | 32.2 | 30.8 | 38.0 |
| Urban | 27.4 | 19.4 | 27.4 | 7.4 |

Table 3

Average Number of Non-Competitive Responses per Trial, for Kubbutz & Urban Children, by Sex

| Group | Females | Males |
|---|---|---|
| Kibbutz | 2.8 | 2.4 |
| Urban | 2.2 | .6 |

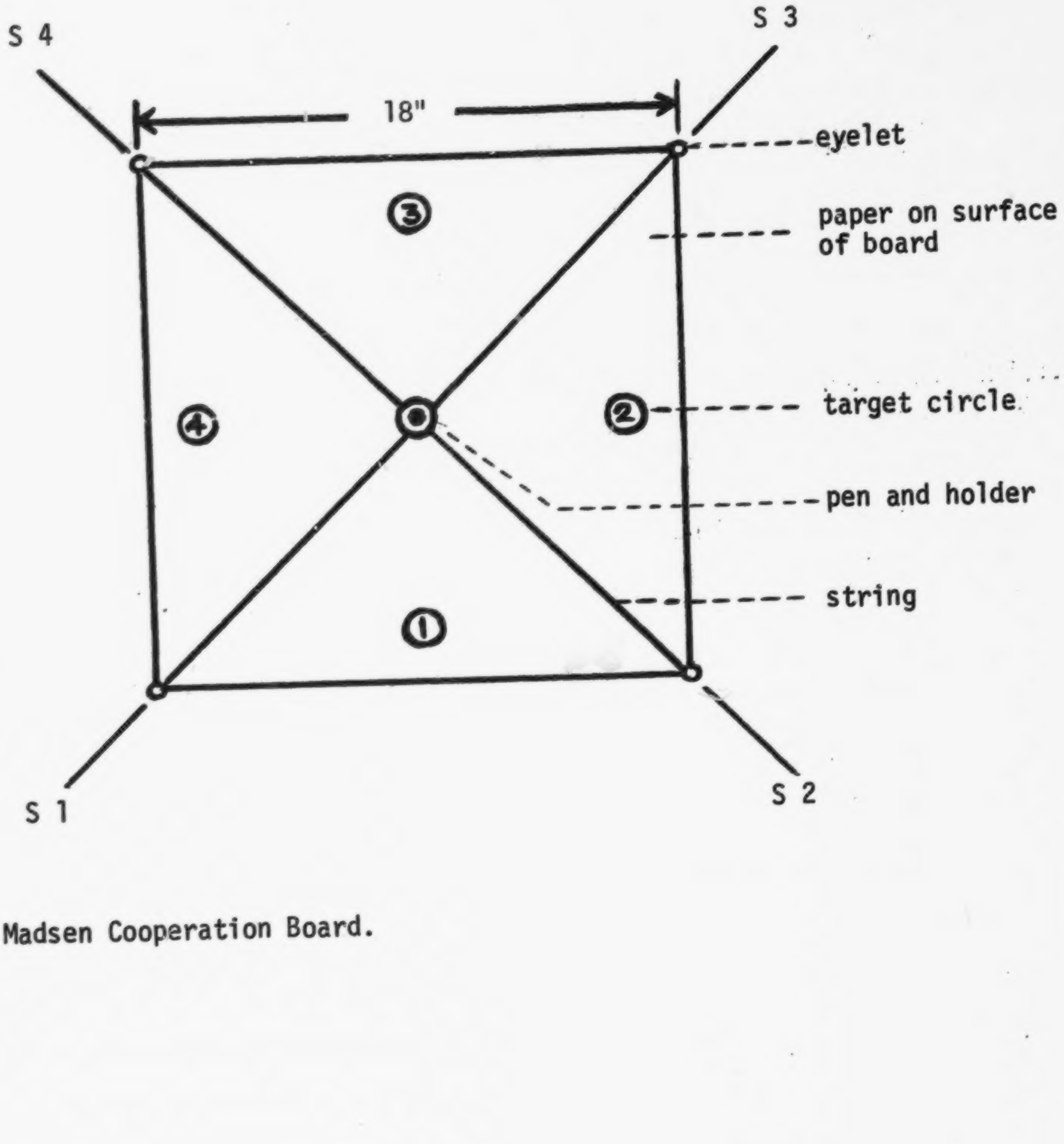

Fig. 1. Madsen Cooperation Board.

✓

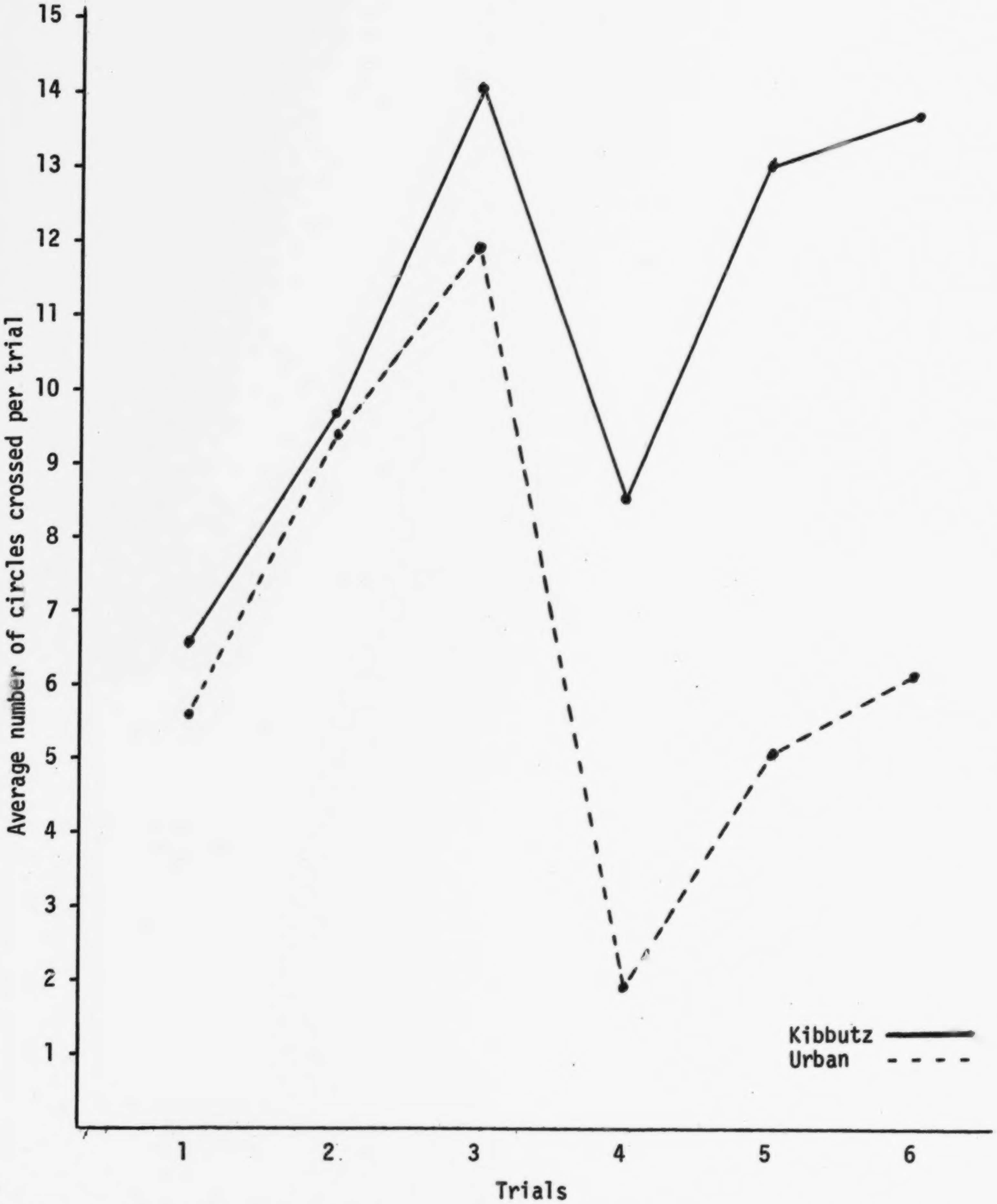

Fig. 2. Comparison of average number of circles crossed per trial by kibbutz and urban children, where Trials 1-3 are under group reward condition and Trials 4-6 are under individual reward condition.

## Project III

## Measurement of Change in Social and Personal Attitudes of Parents of Children in Project Head Start

### Principal Investigator

Harry Kitano, Department of Social Welfare

| Research Assistants | Protocol Analysis |
|---|---|
| Sarah Davis | Alice Hughes |
| Aileen Gaal | Frances Metter |
| Susan Hanson | |

This project has three facets. In line with the central objective of the UCLA Evaluation and Research Center, the major focus of all research is that of increasing our knowledge of how to improve the prediction for scholastic success of children from disadvantaged populations. In the past, these children have demonstrated dissonance with respect to the types of values which lead to desirable levels of achievement in the dominant culture. A basic hypothesis is that these values have their roots in parental attitudes toward the culture in general and toward education in particular. Thus the Project Head Start program places great stress on obtaining parental interest and involvement.

The first paper in this section is in the nature of a pilot study of the "Effect of parent participation in Head Start on subsequent utilization of community resources." It is also concerned with how parents view the Head Start personnel and how the individual staff members view each other.

While it was demonstrated that parents did change as a result of their participation in the program, the measures used were necessarily crude. An important aspect of the work of Project III is therefore concerned with the development and validation of an instrument which will be sensitive to these important changes. The second paper reports the rationale and approach to the development of an instrument to measure pre - post changes in parental attitudes, especially in the area of alienation.

The third facet of Project III is concerned with an experiment to test "The value of special instruction in producing more effective modes of home teaching in parents of disadvantaged children." The first step has been the preparation of an instrument to measure parental attitudes toward the Head Start program. This instrument, and the description of the study are included as the third report in this section.

# Effect of parent participation in Head Start on subsequent utilization of community resources

It has often been suggested that much of the growth occurring as a result of compensatory programs is undetected by instruments which measure only changes in children's performance on I.Q. tests. The present study was an attempt to carry out an in-depth analysis of one center so as to measure the impact of an intervention program not only in terms of the changes in the children but also those occurring in the adult participants: parents, teachers, and community service personnel. In addition to the preschool program, the services offered at this center included health, social welfare, and adult education classes. This multi-disciplinary approach provided an opportunity to evaluate the effect of the interactions among the center personnel as well as the changes produced in the parents and their children.

## Method

### Subjects

There were 37 children in two classes enrolled at the center. Most of the children came from Mexican-American homes with Spanish as the first language. The personnel for each class included an experienced full-time nursery school teacher and a neighborhood aide. A part-time social worker (15 hours per week) and a nurse (20 hours per week) served both classes.

### Program

The parents of the children participated in parent education classes (three hours per week), and an English class (two hours per week). The usual medical services were provided. The children received a three-hour child-oriented preschool curriculum on a five-day per week basis.

Pretesting took place in November, 1966, by volunteer workers. The posttesting was in June, 1967, permitting a pre-post interval of approximately six months.

Instruments Used.

a. A parent questionnaire (see Appendix A), available in a Spanish translation for those with little facility in English, was given to mothers to fill out either in the center or at home.

b. Participating professionals were requested to fill in a questionnaire (Appendix B), at the beginning and end of the program.

c. Attendance and participation records of parents at various functions were kept by the classroom teachers.

d. Records of professionals and consultants, including referrals and contacts with other community agencies, were also used as a measure of parent change in utilization of community resources.

e. All children were given the Peabody Picture Vocabulary Test and the Clark Motor Test at the beginning and end of the period. The Goodenough Draw-a-Man Test was given only as a posttest.

f. Case reports and teacher summaries were used to help evaluate changes in individual children.

Results

Table 1 presents pre- and posttest means for chronological age and for

- - - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - - -

three measures of performance. Unfortunately, the Goodenough Draw-a-Man Test, which is least likely to reflect language acquisition, was given only as a posttest. The Peabody Picture Vocabulary Test shows a significant change ($p < .05$) from pre- to posttest. However, the pretesting was done by non-professional personnel, and it is very possible that some ad hoc translating into Spanish was done. In spite of this, eight of the 26 children were unable to respond appropriately to even one item. On the posttest, two of these children still could not respond to the English words. However, four of the eight scored at the two-year-old level, one scored at three, and one at four.

The Clark Motor Development Scale is a new instrument intended to help teachers evaluate the motor development of the young child. It is not a standardized test and the values given in Table 1 indicate the raw scores, based on a total possible of 40 points. The scores are not to be looked at as norms, but simply as a measure of change. Evidently the performance of these children showed no reliable differences after the six month preschool experience in those skills measured by this test. Some of the subtests consisted of balancing on one foot, hopping on one foot, galloping, skipping, catching a bean bag, and touching fingers independently.

The results of the questionnaires given to parents and professionals at the center are reported in Tables 2 and 3. The reports of both professionals

- - - - - - - - - - - - - - - -

Insert Tables 2 & 3 about here

- - - - - - - - - - - - - - - -

and parents showed change in a positive direction. That is, either their perception of the role of the profession became clearer, or their appreciation of the persons contribution to either the parent or the child was improved.

There seemed to be a slight, though not statistically reliable, tendency for decreases in the perception of the roles of doctor and social worker on the part of the parents. Professional perception of the role of the nurse also showed a decrease, but again these differences were so small as to be attributable to chance.

### Discussion

Using the Peabody Picture Vocabulary Test simply as a measure of language rather than of mental ability, it is quickly apparent that these children are still considerably below the level of middle-class children of the same age and will be at a severe disadvantage when entering the average American school. While this language deficit is to be expected with children where English is not spoken in the home, the scores on the Goodenough Draw-a-Man Test, which taps certain basic intellectual abilities independent of language, are also below the norm. Thus, in spite of the fact that very considerable gains were made during the intervention period, it is clear that these children need a continued enrichment program throughout the primary grades.

In addition to the measured gains in language, the anecdotal records of the teachers reported improvement in other significant areas of behavior. The beginning of independence from the parent, with the concomitant development of the ability to work well with others, children as well as adults, were very important gains. Also, the children became adapted to the routines of the school environment and familiar with the appropriate use of materials and equipment and familiar with the appropriate use of materials and equipment. Not only will these changes help the child make the transition into kindergarten; he will also be better able to profit from programs planned to build on and extend the gains made in the preschool year.

Analysis of the data from the interviews shows definite growth in a positive direction. Initial misunderstandings, initial misperceptions of roles, e.g. questions such as: "What does a nurse really do?", "What is a social worker?", "Who makes what decisions under what circumstances?", led to the development of better working relationships among the members of the professional teams. However, the most effective professional interactions were among those members who worked together on one site. Further, those professionals who had most contact with parents and children showed the most growth.

In addition to the data reported in tabular form, anecdotal records and other personal reports and conferences suggest that "outside consultants" are viewed as outsiders, and therefore remain relatively isolated from the on-going concerns of those professionals actively involved in the day-to-day operations.

Among the parents, the degree of involvement, participation, and perceptions of the program showed wide variations. There seemed to be a bimodal distribution, with one group responding extremely favorably, participating enthusiastically, reporting on the helpfulness of the program to themselves and to their children, while the response of a second group was characterized by a degree of apathy, spasmodic attendance, and a low degree of overall involvement. These results may reflect the fact that only a little over half of the questionnaires were returned, introducing an important population bias. It may be that only parents feeling strongly, either in a positive or negative direction, filled out the forms, while those who were indifferent or held moderate views failed to reply.

One important outcome of the program at this Child Development Center was the creation of a strong rapport and neighborhood feeling among the parents who participated. The need to obtain full parent involvement is an oft noted concern of all professionals working in the Head Start program. The present study demonstrated that conscious effort to clarify professional roles is of value not only to the parents but also to the professional workers themselves. It was also demonstrated that while children's gains are considerable, they are not sufficient to overcome four years of educational and language deficits. Cessation of an enrichment program at the point where these children enter the regular school system will in effect be slamming the door just as we have glimpsed what is possible.

Table 1

C.A. and M.A. (in months) on Peabody Picture Vocabulary, Goodenough Draw-a-Man, and Clark Motor Development Tests

| Measure | N | November 1966 | | N | June 1967 | |
|---|---|---|---|---|---|---|
| | | Mean | S.D. | | Mean | S.D. |
| Chronological Age | 33 | 62.4 | 4.3 | 33 | 69.4 | 4.0 |
| Peabody | 26 | 31.8 | 24.0 | 25 | 44.0 | 14.2 |
| Clark | 23 | 29.2 | 7.2 | 23 | 24.5 | 7.0 |
| Goodenough | | (Not Given) | | 29 | 55.4 | 13.4 |

Table 2

Ratings of Perceptions by Professionals & Parents with Reference to:

| Professional Category | Professional Roles of Others | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Responses by Professionals (N = 6) | | | | | | Responses by Parents (N = 24) | | | | | |
| | Pre | | | Post | | | Pre | | | Post | | |
| | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 1 |
| Supervisor | 3 | 2 | 1 | 3 | 1 | | 1 | | 7 | 4 | | 3 |
| Teacher | 2 | 4 | | 4 | 2 | | 6 | | 2 | 7 | | |
| Nurse | 3 | 2 | | 2 | 3 | | 8 | | | 7 | | |
| Doctor | 1 | 2 | 3 | 3 | 3 | | 5 | | 3 | | 7 | |
| Social Worker | 1 | 4 | | 3 | 2 | | 5 | | 3 | 6 | | |
| Volunteer | 2 | 3 | 1 | 4 | 2 | | 6 | | 2 | 7 | | |

| Professional Category | Helpfulness of Professionals to: | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Parents | | | | | | | | | | | | Children | | | | | |
| | Responses by Professionals | | | | | | Responses by Parents | | | | | | Responses by Parents | | | | | |
| | Pre | | | Post | | | Pre | | | Post | | | Pre | | | Post | | |
| | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 1 |
| Supervisor | 1 | 4 | 1 | 1 | 3 | | 1 | 1 | | 4 | | | 1 | 1 | | 3 | | |
| Teacher | 1 | 5 | | 4 | 2 | | 5 | 4 | | 5 | 2 | | 8 | 1 | | 6 | 1 | |
| Nurse | 2 | 3 | | 4 | 1 | | 4 | 4 | | 5 | 2 | | 5 | 1 | | 6 | 1 | |
| Doctor | | 3 | 3 | 2 | 4 | | 1 | 2 | 2 | 4 | 3 | | 2 | 3 | | 4 | 2 | |
| Social Worker | 1 | 4 | | 4 | 1 | | 3 | 2 | | 2 | 3 | | 2 | 3 | | 3 | 1 | |
| Volunteer | 2 | 3 | 1 | 4 | 1 | | 1 | 4 | | 2 | 2 | | 3 | 3 | | 6 | | |

Note.--- For all responses: 3 = high level; 2 = moderate; 1 = little

## Table 3

## Average Level of Perception by Professionals & Parents with Reference to:

| Professional Category | a. Professional Roles of Staff | | | |
|---|---|---|---|---|
| | Responses by Professionals | | Responses by Parents | |
| | Pre | Post | Pre | Post |
| Supervisor | 2.3 | 2.8 | 1.3 | 2.1 |
| Teacher | 2.3 | 2.7 | 2.5 | 3.0 |
| Nurse | 2.6 | 2.4 | 3.0 | 3.0 |
| Doctor | 1.7 | 2.5 | 2.3 | 2.0 |
| Social Worker | 2.2 | 2.6 | 2.3 | 3.0 |
| Volunteer | 2.2 | 2.7 | 2.5 | 3.0 |

| Professional Category | Helpfulness of Professionals to: | | | | | |
|---|---|---|---|---|---|---|
| | b. Parents | | | | c. Children | |
| | Responses by Professionals | | Responses by Parents | | Responses by Parents | |
| | Pre | Post | Pre | Post | Pre | Post |
| Supervisor | 2.0 | 2.3 | 1.7 | 3.0 | 1.7 | 3.0 |
| Teacher | 2.2 | 2.7 | 2.6 | 2.7 | 2.9 | 2.9 |
| Nurse | 2.4 | 2.8 | 2.5 | 2.7 | 2.4 | 2.9 |
| Doctor | 1.5 | 2.3 | 1.8 | 2.5 | 2.4 | 2.7 |
| Social Worker | 2.2 | 2.8 | 2.6 | 2.4 | 1.9 | 2.8 |
| Volunteer | 2.2 | 2.8 | 2.2 | 2.5 | 2.5 | 3.0 |

# Measurement of changes in parental feelings of alienation as a result of participation in Head Start

Probably one of the most distinctive features of Project Head Start is its emphasis on dealing with the total child. While the professed objective is to bring children from educationally disadvantaged homes to a level of performance more closely approximating that of children from middle-class environments, the program recognizes that the development of academic skills is inextricably related not only to the child's health and nutrition, but in large measure to those affective influences brought to bear upon him in his own home. Thus, parents who feel estranged and hopeless about their own roles in our society are apt to transmit to their children the feeling that effort expended in school learning has little value.

For this reason, a conscious attempt is made to involve the parent of the Head Start child as a volunteer in the classroom, and to make her aware of the various types of community services available to her. Parent education classes are usually part of the regular Head Start program and, in cases where many of the parents do not speak English, language classes are often organized. There seems to be good reason to believe that such efforts will produce changes in those feelings of alienation and powerlessness which characterize the disadvantaged. However, subjective impressions are not acceptable scientific evidence, and there is need for an instrument to dependably measure affective changes which come about as the result of participation in the Head Start program.

The purpose of the present study is to develop an instrument to measure the effect of various parent-centered programs on the feelings of these parents in relation to the community and society at large, with specific reference to a sense of alienation. It is expected that attitudes toward the Head Start program in general, the individual school or class in particular, and also, possibly, to the intrafamilial relationships, will demonstrate change, hopefully in a positive direction.

## Review of the Literature

The area of social integration and concomitant social alienation has been the concern of many social scientists since the concept was first put forth in the late 1800's (Durkheim 1956). Many aspects of the problem have been investigated, including the relation of anomie to social class, frequency of suicide, and political participation. It is generally agreed that alienation is related to education, income, and occupation.

The initial work in this area, done by Leo Srole (1956), delineated five major components of anomia: 1) the individual's sense that community leaders are detached from or indifferent to his needs, reflecting a severance of the interdependent bond within the social system between leaders and those they should represent and serve; 2) the individual's perception of social order as essentially fickle and unpredictable, inducing the sense that under such conditions he can do little to accomplish his life goals; 3) the individual's view that not only must he lower his future life goals, but that he and people like him are losing ground in the goals they have already achieved; 4) the deflation or loss of internalized social norms and values reflected in the individual's sense of the meaninglessness of life itself; and 5) the individual's perception that his framework of immediate personal relations can no longer be maintained.

These five areas form the base not only for Srole's five-item scale but also for much of the subsequent work in this area, both in terms of the construction of various measures and also from a theoretical standpoint. Srole's initial study involved the use of an abbreviated "F" scale along with his Anomia scale and another instrument designed to study attitudes toward minorities. The results seem to indicate that there is "support for the general hypothesis of an interactive process linking the individual state of anomia and interpersonal dysfunction in the social realm" (P. 711). Srole goes on to discuss the functional relationship of different types of personality within the setting of a democratic society. Paraphrasing Merton and Fromm, Srole concludes that "social dysfunction is the dependent variable, the individual's state of self-to-group alienation is the intervening variable, and change in personality (Fromm) or adaptive modes (Merton) is the dependent variable" (P. 716). This is related to Nettler's comment that the alienated are "ideological displaced persons" (Nettler, P. 674) and the observation of Maslow (cited by Nettler, p. 675) that some degree of alienation is necessary in our society for a healthy and fully functioning personality.

Following this same line of investigation, Dean (1961) has shown that alienation has a low negative correlation with occupational prestige, education, income, and background. He concludes that "Alienation is not a personality 'trait' but a situation-relevant variable" (P. 757). Dean has also pointed out that other researchers have found the dimension of normlessness to be related to religious orthodoxy among Protestants. However, when socioeconomic status is held constant, this relationship disappears. Nettler (1957) draws the distinction between alienation as a psychological state of the individual and anomie, which he feels is a societal state of normlessness. This distinction is a useful one and one which many other authors also make. Many studies thus agree that the dimension of alienation or anomie is negatively related to education and some measure of social class (Powell, 1958; Warshay, 1964, and Dean, 1961). Meier and Bell (1959) conclude that there is a "very high negative correlation between anomia, as measured by the Srole scale, and structural access to the means for the achievement of life goals " (P. 190).

A variety of measures have been devised and used to delineate alienation with reference to various social phenomena. Generally speaking, there has been agreement in the words used to define this concept. Elmore (1963) uses such terms as meaninglessness, hopelessness, powerlessness, valuelessness, aloneness, and closedmindedness, while Seeman (1959) refers to normlessness and self-estrangement. In the present investigation, the objective is to design a scale which will not only measure component elements in the concept of alienation, but will also be sensitive to changes which may be produced by planned social interventions within the Head Start framework.

## Method

### Subjects

The scale described below was administered to 56 Head Start parents, 97 graduate students in the Department of Social Welfare, and 19 Head Start personnel.

### Procedure

A set of 198 items were selected from ten scales, as follows:

Berger (1952) Scale of Acceptance of Others. (31 items)
California Personality Inventory (34 items)
Comrey (in Dahlstrom and Welsh, 1960, p. 412) Cynicism Factor (7 items)
Dean (1961) Composite Scales of Alienation (24 items)

Elmore Composite Scales of Alienation (69 items)

MMPI Persecution Scale in Dahlstrom and Welsh, 1960 (3 items)

Nettler (1957) Scale of Societal Estrangement (17 items)

Srole (1956) Fascism Scale abbreviated (3 items)

Srole (1956) Scale of Anomia (5 items)

Zimmer (in McDill and Ridley, 1962) Scale of Political Alienation (5 items)

In addition to the items drawn from these scales, 18 new items were constructed to measure child-rearing attitudes in general as well as attitudes toward the effects of the Head Start program. The total scale thus consisted of 213 items. (See Table 1 for item descriptions and scale sources.)

- - - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - - -

All subjects were instructed that their responses would be kept anonymous, and were completely voluntary. They were asked to answer each item as honestly as possible using a true/false response. Due to the fact that this was a pilot study with a large pool of items, the subjects were to ask questions freely as well as to make comments which might help reword ambiguous statements.

The 216 item scale was administered for the most part in group settings at the various sites and by mail to the UCLA students. A Spanish translation made it possible to include a number of Spanish speaking parents.

## Results

The characteristics of the three sample populations are presented in Table 2. The age categories are in eight groupings, with the first group not

- - - - - - - - - - - - - -

Insert Table 2 about here

- - - - - - - - - - - - - -

listed since there were no subjects under 20 years of age. The average age for all the groups would thus fall at the top of the third category, i.e. between 28 and 29 years.

The responses of the 170 subjects to each of the 216 items in the scale were scored in terms of the 21 subscales (see Table 1) plus a total score over all the items, providing 22 scores per respondent. A factor analysis of the data yielded 10 distinct primary factor loadings (See Table 3). Of the items, 103 were found to discriminate among the three populations at the .001 level of significance, with 43 more items discriminating at the .05 level. Further analyses of the data are in progress, to provide a basis for reducing the number of items in the scale. It will also be necessary to hold the socioeconomic status factor constant so as to discriminate high and low alienation groups within a particular subculture.

- - - - - - - - - - - - - -

Insert Table 3 about here

- - - - - - - - - - - - - -

## Discussion

After the projected analyses, a variable measure of alienation should be available for use as a pre-and posttest measure to evaluate changes in feelings of alienation which can be effected through Head Start intervention. A study is now getting underway which involves providing parents with materials and techniques for improving the language performance of their Head Start children. Hopefully the scale reported in this study will provide insight into what types of changes can be expected when parents are given tangible evidence that they are not completely powerless and that there are some areas in which they can make real contributions to the future prospects of their children.

## References

Bell, W. Anomie, social isolation and the class structure. Sociometry, 1957, 20, 105-116.

Berger, E. M. The relation between the expressed acceptance of self and expressed acceptance of others. Journal of Abnormal Social Psychology, 1952, 47, 778-782.

Crowne, D. P., & Marlowe, D. A new scale of social desirability independent of psychopathology. Journal of Consulting Psychology, 24, 349-354.

Dahlstrom, W. G., & Welsh, G. S. A Minnesota Multiphasic Personality Inventory handbook. Minneapolis: University of Minnesota Press, 1960.

Dean, D. G. Alienation: Its meaning and measurement. American Sociological Review, 1961, 26, 753-758.

Durkheim, E. Education and sociology. Glencoe, Ill., The Free Press, 1956.

Elmore, T. M. The development of a scale to measure psychological anomie. Dissertation Abstracts, 1963, 23, 3006.

Hathaway, S. R., & McKinley, J. C. Minnesota Multiphasic Personality Inventory. New York: Psychological Corporation, 1943.

Meier, D., & Bell, W. Anomia and differential access to the achievement of life goals. American Sociological Review, 1959, 24, 189-202.

McDill, E. L., & Ridley, J. C. Status, anomia, political alienation and political participation. American Journal of Sociology, 1962, 68, 205-213.

Nettler, G. A measure of alienation. American Sociological Review, 1957, 22, 670-678.

Powell, E. H. Occupation, status and suicide: A redefinition of anomie. American Sociological Review, 1958, 23, 131-139.

Seeman, M. The meaning of alienation. American Sociological Review, 1959, 24, 783-79.

Strole, L. Social integration and certain corollaries: An exploratory study. American Sociological Review, 1956, 21, 709-716.

Warshay, L., Goldman, M., & Biddle, E. Anomie and F Scales as related to social characteristics. Journal of Social Psychology, 1964, 62, 117-123.

Table 1

Description of Population Tested

| | | Total | | Parents | | Students | | Headstart Personnel (Professional & Semi-Pro) | |
|---|---|---|---|---|---|---|---|---|---|
| **Sex** | | N | % | N | % | N | % | N | % |
| Male | | 35 | 20.6 | 2 | 3.6 | 33 | 34.7 | | |
| Female | | 135 | 79.4 | 54 | 96.4 | 62 | 65.3 | 19 | 100.0 |
| **Age** | **Group** | | | | | | | | |
| 20-24 | 2 | 28 | 18.7 | 4 | 7.3 | 20 | 26.3 | 4 | 21.1 |
| 25-29 | 3 | 51 | 34.0 | 24 | 43.6 | 22 | 29.0 | 5 | 26.3 |
| 30-34 | 4 | 24 | 16.0 | 10 | 18.2 | 12 | 15.8 | 2 | 10.5 |
| 35-39 | 5 | 24 | 16.0 | 13 | 23.6 | 8 | 10.5 | 3 | 15.8 |
| 40-44 | 6 | 11 | 7.3 | 1 | 1.8 | 7 | 9.2 | 3 | 15.8 |
| 45-49 | 7 | 10 | 6.7 | 3 | 5.5 | 7 | 9.2 | | |
| 50+ | 8 | 2 | 1.3 | | | | | 2 | 10.5 |
| Mean Age Grouping | | 3.8 | | 3.9 | | 3.8 | | 4.2 | |
| S.D. | | 1.5 | | 1.2 | | 1.6 | | 1.9 | |
| **Marital Status** | | | | | | | | | |
| Married | | 89 | 52.1 | 24 | 42.9 | 55 | 57.3 | 10 | 52.6 |
| Divorced | | 25 | 14.6 | 13 | 23.2 | 8 | 8.3 | 4 | 21.1 |
| Separated | | 13 | 7.6 | 12 | 21.4 | | | 1 | 5.3 |
| Widowed | | 4 | 2.3 | 3 | 5.4 | | | 1 | 5.3 |
| Single | | 40 | 23.4 | 4 | 7.1 | 33 | 34.4 | 3 | 15.8 |

Table 1 (con't)

| | Total | | Parents | | Students | | Headstart Personnel (Professional & Semi-Pro) | |
|---|---|---|---|---|---|---|---|---|
| Race | N | % | N | % | N | % | N | % |
| Negro | 29 | 17.1 | 17 | 30.4 | 5 | 5.3 | 7 | 36.8 |
| Caucasian | 112 | 65.9 | 19 | 33.9 | 86 | 90.5 | 7 | 36.8 |
| Mex./Amer. | 14 | 8.2 | 7 | 12.5 | 2 | 2.1 | 5 | 26.3 |
| Latin/Amer. | 8 | 4.7 | 8 | 14.3 | | | | |
| Mexican | 5 | 2.9 | 5 | 8.9 | | | | |
| Oriental | 2 | 1.2 | | | 2 | 2.1 | | |
| Language Needs | | | | | | | | |
| English | 154 | 89.5 | 40 | 71.4 | 97 | 100.0 | 17 | 89.5 |
| Spanish | 18 | 10.5 | 16 | 28.6 | | | 2 | 10.5 |

Table 2

Item Description, Scale Sources, and Scores

For Parents, University Students, and Head Start Personnel

| | Item # | Total | Parents | Students | Pro + Semi-Pro |
|---|---|---|---|---|---|
| cale 1:0-3 | MMPI--Persecution | | | | |
| Range | 1-3 | 0-3 | 0-3 | 1-3 | 0-3 |
| Mean | | 1.70 | 1.27 | 1.96 | 1.68 |
| S.D. | | 0.67 | 0.67 | 0.52 | 0.67 |
| cale 2:0-5 | Srole--Abbreviated Fascism Scale | | | | |
| Range | 4-6 | 0-3 | 0-3 | 0-2 | 0-3 |
| Mean | | 0.86 | 2.02 | 0.13 | 1.16 |
| S.D. | | 1.15 | 1.09 | 0.40 | 1.01 |
| cale 3:0-7 | Comrey--Cynicism Factor | | | | |
| Range | 7-13 | 0-7 | 0-7 | 1-7 | 0-7 |
| Mean | | 4.22 | 2.86 | 5.07 | 3.84 |
| S.D. | | 2.19 | 2.24 | 1.75 | 2.03 |
| cale 4:0-5 | Srole--Anomia Scale | | | | |
| Range | 14-18 | 0-5 | 0-5 | 0-5 | 0-5 |
| Mean | | 1.62 | 2.77 | 0.84 | 2.26 |
| S.D. | | 1.57 | 1.49 | 1.04 | 1.73 |
| cale 5:0-5 | Zimmer--Political Alienation | | | | |
| Range | 19-23 | 0-5 | 0-5 | 0-5 | 1-5 |
| Mean | | 2.84 | 3.05 | 2.72 | 2.79 |
| S.D. | | 1.34 | 1.31 | 1.35 | 1.36 |
| cale 6:0-5 | UCLA--Aspirations for Child | | | | |
| Range | 24-28 | 0-4 | 0-3 | 0-4 | 0-3 |
| Mean | | 1.58 | 1.93 | 1.37 | 1.58 |
| S.D. | | 0.94 | 0.85 | 0.95 | 0.90 |

Table 2 (con't)

| | Item # | Total | Parents | Students | Pro + Semi-Pr |
|---|---|---|---|---|---|
| Scale 7:0-17 Nettler Scale of Social Estrangement | | | | | |
| Range | 29-45 | 0-13 | 1-11 | 1-13 | 0-11 |
| Mean | | 6.65 | 5.29 | 7.65 | 5.53 |
| S.D. | | 2.82 | 2.36 | 2.45 | 3.79 |
| Scale 8:0-9 Dean Subscale 1 Powerlessness | | | | | |
| Range | | 0-9 | 1-9 | 0-9 | 1-9 |
| Mean | | 4.20 | 5.10 | 3.28 | 4.47 |
| S.D. | | 2.24 | 1.95 | 1.86 | 2.46 |
| Scale 9:0-6 Dean Subscale 2 Normlessness | | | | | |
| Range | | 0-6 | 0-6 | 0-6 | 0-6 |
| Mean | | 2.41 | 3.48 | 1.68 | 2.95 |
| S.D. | | 1.82 | 1.84 | 1.41 | 1.96 |
| Scale 10:0-9 Dean Subscale 3 Social Isolation | | | | | |
| Range | | 0-8 | 0-8 | 0-8 | 0-7 |
| Mean | | 3.88 | 4.32 | 3.59 | 4.05 |
| S.D. | | 1.79 | 1.81 | 1.74 | 1.81 |
| Scale 11:0-24 Dean Alienation Scale | | | | | |
| Range | 46-69 | 0-22 | 2-22 | 0-19 | 3-22 |
| Mean | | 10.48 | 13.5 | 8.55 | 11.47 |
| S.D. | | 4.95 | 4.64 | 4.05 | 5.48 |
| Scale 12:0-31 Berger Scale of Acceptance of Others | | | | | |
| Range | 70-97 | 1-23 | 3-23 | 1-18 | 2-19 |
| Mean | 208, 209, 211 | 7.67 | 11.18 | 5.55 | 7.79 |
| S.D. | | 4.81 | 5.21 | 3.14 | 4.59 |

Table 2 (con't)

| | Item # | Total | Parents | Students | Pro + Semi-Pro |
|---|---|---|---|---|---|
| ale 13:0-34 | California Personality Inventory S-a (self-acceptance) | | | | |
| Range | 98-131 | 6-23 | 9-23 | 6-21 | 9-21 |
| Mean | | 13.77 | 15.21 | 13.0 | 13.47 |
| S.D. | | 3.42 | 3.24 | 3.18 | 3.91 |
| ale 14:-2 to 15 | Elmore[1] General Factor--Meaninglessness | | | | |
| Range | | 0-15 | 0-14 | 0-10 | 0-15 |
| Mean | | 4.23 | 6.75 | 2.58 | 5.26 |
| S.D. | | 3.62 | 3.93 | 1.77 | 4.98 |
| ale 15:-4 to 17 | Elmore 1st Factor--Valuelessness | | | | |
| Range | | -3 to 15 | -3-+14 | -3-+9 | -1-+15 |
| Mean | | 3.29 | 4.61 | 2.21 | 4.95 |
| S.D. | | 3.68 | 4.36 | 2.40 | 4.99 |
| ale 16:-7 to 17 | Elmore 2nd Factor--Hopelessness | | | | |
| Range | | -7 to +12 | -5-+12 | -7-+9 | -5-+12 |
| Mean | | 0.89 | 4.46 | -1.40 | 2.05 |
| S.D. | | 4.75 | 4.79 | 3.07 | 4.97 |
| ale 17:-6 to 16 | Elmore 3rd Factor--Powerlessness | | | | |
| Range | | -6 to +13 | -5-+13 | -6-+6 | -5-+13 |
| Mean | | 0.48 | 4.21 | -1.98 | 2.05 |
| S.D. | | 4.89 | 4.99 | 2.79 | 5.55 |
| ale 18:-6 to 15 | Elmore 4th Factor--Aloneness | | | | |
| Range | | -6 to +14 | -6-+14 | -5-+7 | -4-+11 |
| Mean | | 1.38 | 3.50 | -0.05 | 2.42 |
| S.D. | | 3.86 | 4.53 | 2.43 | 4.55 |

---

tems taken from the Elmore Scale are Nos. 132-199 and 210 in the UCLA Scale.

Table 2 (con't)

| | Item # | Total | Parents | Students | Pro + Semi-Pr |
|---|---|---|---|---|---|
| Scale 19:-5 to 14 Elmore 5th Factor--Closemindedness | | | | | |
| Range | | -5 to +13 | -5-+13 | -5-+9 | -3-+11 |
| Mean | | 2.12 | 4.55 | 0.48 | 3.26 |
| S.D. | | 3.88 | 4.17 | 2.72 | 3.98 |
| Scale 20:0 to 5 UCLA Community and Self Scale | | | | | |
| Range | 201-205 | 0-5 | 0-4 | 0-4 | 0-5 |
| Mean | | 1.57 | 0.98 | 1.89 | 1.68 |
| S.D. | | 1.10 | 0.73 | 1.14 | 1.20 |
| Scale 21:0 to 8 UCLA Child-Rearing Scale | | | | | |
| Range | 200, 206, 207 | 0-7 | 0-5 | 0-7 | 0-3 |
| Mean | 212-216 | 2.02 | 2.57 | 1.68 | 2.16 |
| S.D. | | 1.38 | 1.52 | 1.27 | 0.83 |
| Scale 22:-25 to 216 All Scales | | | | | |
| Range | 216 | 14-173 | 28-171 | 14-127 | 35-173 |
| Mean | | 77.81 | 104.21 | 60.78 | 86.89 |
| S.D. | | 37.53 | 39.54 | 22.85 | 44.70 |

### Table 3

### Factor Loadings with $\chi^2$ 3-Way Levels of Significance Among 3 Populations

### Factor 1: Disappointment in Human Nature and in the Nature of Society

| Item # | Significance Level | Scale Sources | Other Factor Loadings | Factor 1 Loading |
|---|---|---|---|---|
| 4 | .001 | 2 | | +.515 |
| 12 | .001 | 3 | | +.477 |
| 17 | .001 | 4 | | +.475 |
| 20 | .001 | 5 | | +.473 |
| 49 | .001 | 9 | | +.397 |
| 53 | .001 | 10 | | -.408 |
| 75 | .001 | 12 | | +.274 |
| 87 | .001 | 12 | | +.386 |
| 135 | .001 | 17 | | +.558 |
| 137 | .001 | 15 | | +.470 |
| 190 | .001 | 17 & 18 | | +.434 |
| 191 | .001 | 16 | | +.255 |
| 192 | .001 | 14 | | +.530 |
| 9 | .001 | 3 | 8 | +.368 |
| 13 | .001 | 3 | 4 | +.468 |
| 14 | .001 | 4 | 8 | +.361 |
| 44 | .05 | 7 | 6 | +.360 |
| 45 | .001 | 7 | 7 | +.345 |
| 51 | .005 | 8 | 6 | +.312 |
| 62 | .001 | 10 | 8 | +.335 |
| 66 | .001 | 8 | 5 | +.412 |
| 88 | .001 | 12 | 3 | +.272 |

Note.— See Table 2 for Item Description and Scale Sources.

Table 3 (con't)

| Item # | Significance Level | Scale Sources | Other Factor Loadings | Factor 1 Loading |
|---|---|---|---|---|
| 89 | .001 | 12 | 9 | +.375 |
| 94 | .001 | 12 | 8 | +.342 |
| 136 | .001 | 14-16-17 & 18 | 8 | +.402 |
| 150 | .001 | 19 | 2 | +.425 |
| 167 | .005 | 18 | 10 | -.428 |
| 172 | .05 | 15 | 9 | -.444 |
| 189 | .001 | 14 | 9 | +.431 |
| | Factor 2: Disillusionment--Valuelessness and Hopelessness | | | Factor 2 Loading |
| 142 | | 15 | | +.327 |
| 148 | .005 | 16 | | +.580 |
| 149 | | 15 | | +.646 |
| 156 | .001 | 15 & 16 | | +.341 |
| 161 | .05 | 15 | | +.498 |
| 164 | | 18 | | +.544 |
| 165 | | 19 | | +.408 |
| 185 | .001 | 17 | | +.499 |
| 23 | .05 | 5 | 7 | -.355 |
| 68 | | 8 | 9 | -.374 |
| 134 | .001 | 15 | 1 | +.382 |
| 158 | .001 | 15 | 1 | +.415 |
| 162 | | 14-17 & 18 | 5 | +.322 |
| 56 | | 10 | | +.215 |

### Table 3 (con't)

### Factor 3: Acceptance of Self and Others

| Item # | Significance Level | Scale Sources | Other Factor Loadings | Factor 3 Loading |
|---|---|---|---|---|
| 86 | | 12 | | +.512 |
| 105 | | 13 | | -.418 |
| 29 | .001 | 7 | 1 | -.377 |
| 55 | | 9 | 9 | +.282 |
| 81 | | 12 | 1 | -.243 |
| 83 | .005 | 12 | 8 | +.429 |
| 110 | .05 | 13 | 8 | -.445 |
| 124 | .005 | 13 | 1 | +.278 |
| 182 | | 14 & 15 | 2 | +.340 |

### Factor 4: Child Rearing Patterns

| Variable | | | Factor 4 Loading |
|---|---|---|---|
| 200 | .05 | 21 | -.489 |
| 204 | .001 | 20 | -.646 |
| 207 | .001 | 21 | -.573 |
| 208 | .005 | 12 | -.392 |
| 210 | .001 | 15 | -.697 |
| 211 | .001 | 12 | -.607 |
| 213 | | 21 | -.510 |
| 214 | .001 | 21 | -.639 |
| 215 | .001 | 21 | -.689 |
| 216 | .001 | 21 | -.514 |
| 95 | .001 | 12 | -.227 |

### Table 3 (con't)

| Variable | Significance Level | Scale Sources | Other Factor Loadings | Factor 4 Loading |
|---|---|---|---|---|
| 202 | .001 | 20 | 2 | -.393 |
| 203 | .005 | 20 | 3 | -.646 |

### Factor 5: Aspirations for Child and View of Self

| | | | | Factor 5 Loading |
|---|---|---|---|---|
| 5 | .001 | 2 | | +.392 |
| 28 | | 6 | | +.372 |
| 79 | .001 | 12 | | +.351 |
| 91 | .05 | 12 | | +.438 |
| 192 | .001 | 14 | | -.204 |
| 1 | | 1 | 2 | -.322 |
| 26 | .005 | 6 | 4 | +.278 |
| 34 | | 7 | 3 | +.291 |
| 36 | .05 | 7 | 8 | +.168 |
| 71 | .005 | 12 | 9 | +.334 |
| 97 | .001 | 12 | 7 | +.329 |
| 100 | | 13 | 1 | +.397 |

### Factor 6: Relation of Self to Others

| Item # | | | | Factor 6 Loading |
|---|---|---|---|---|
| 103 | .01 | 13 | | +.351 |
| 107 | | 13 | | +.317 |
| 118 | .05 | 13 | | +.319 |
| 131 | | 13 | | +.241 |

Table 3 (con't)

| Item # | Significance Level | Scale Sources | Other Factor Loadings | Factor 6 Loading |
|---|---|---|---|---|
| 24 | | 6 | 9 | +.096 |
| 38 | | 7 | 5 | +.405 |
| 46 | | 10 | 8 | +.426 |
| 74 | .001 | 12 | 1 | +.288 |
| 78 | | 12 | 7 | +.339 |
| 108 | | 13 | 2 | +.289 |
| 114 | | 13 | 8 | +.367 |
| 119 | | 13 | 9 | +.333 |
| 127 | .001 | 13 | 1 | +.426 |
| 138 | | 19 | 1 | +.550 |
| 147 | .05 | 19 | 9 | +.282 |
| 168 | | 16 - 17 & 19 | 9 | +.389 |
| | | Factor 7: Role of Self In Community | | Factor 7 Loading |
| 35 | .001 | 7 | | +.522 |
| 37 | .001 | 7 | | +.319 |
| 2 | .001 | 1 | 1 | +.414 |
| 22 | | 5 | 4 | -.281 |
| 30 | .001 | 7 | 1 | +.371 |
| 31 | .001 | 7 | 6 | +.315 |
| 42 | .001 | 7 | 2 | +.382 |
| 82 | .001 | 12 | 5 | +.398 |
| 84 | .005 | 12 | 2 | +.374 |
| 129 | .001 | 13 | 3 | +.402 |
| 188 | | 15 | 1 | -.369 |

## Table 3 (con't)

### Factor 8: Acceptance of Others

| Variable | Significance Level | Scale Sources | Other Factor Loadings | Factor 8 Loading |
|---|---|---|---|---|
| 102 | | 13 | | -.710 |
| 109 | .001 | 13 | | -.647 |
| 123 | .001 | 13 | | -.712 |
| 128 | | 13 | | -.578 |
| 39 | | 7 | 6 | -.236 |
| 62 | .001 | 10 | 1 | -.337 |
| 64 | .001 | 9 | 9 | -.292 |
| 70 | | 12 | | +.382 |
| 111 | .001 | 13 | 6 | -.490 |
| 112 | .001 | 13 | 5 | +.299 |
| 115 | | 13 | 10 | -.430 |
| 125 | | 13 | 5 | -.246 |
| 198 | | 17 | 2 | +.372 |
| 199 | .001 | 16 | 1 | -.277 |

### Factor 9: Powerlessness, Close Mindedness, Aloneness

| | | | | Factor 9 Loading |
|---|---|---|---|---|
| 173 | .001 | 17 | | +.502 |
| 176 | .001 | 19 | | +.502 |
| 177 | .001 | 14 - 15 & 17 | | +.674 |
| 25 | .001 | 6 | 7 | +.292 |
| 43 | .005 | 7 | 5 | +.339 |
| 47 | .001 | 8 | 2 | +.271 |
| 152 | .001 | 17 | 8 | +.430 |

Table 3 (con't)

| Variable | Significance Level | Scale Sources | Other Factor Loadings | Factor 9 Loading |
|---|---|---|---|---|
| 170 | .001 | 14 - 15 & 17 | 5 | +.535 |
| 179 | | 18 | 2 | +.279 |
| 181 | .001 | 16 & 18 | 3 | +.434 |
| 183 | .001 | 15 | 1 | +.482 |
| 187 | | 19 | 2 | +.314 |
| | | Factor 10: Social Estrangement | | Factor 10 Loading |
| 99 | | 13 | | -.491 |
| 58 | | 8 | | -.272 |
| 8 | | 3 | 1 | +.274 |
| 27 | | 6 | 9 | +.281 |
| 80 | .05 | 12 | 9 | -.265 |
| 101 | | 13 | 8 | -.378 |
| 117 | .05 | 13 | 1 | -.365 |
| 139 | .001 | 18 | 2 | -.262 |
| 155 | | 17 | 6 | -.499 |
| 201 | .05 | 20 | 4 | -.327 |

## The value of special instruction in producing more effective modes of home teaching in parents of disadvantaged children

In the middle-class home, parents are not only concerned with the physical well-being and nurturance of their children, but also with their early cognitive growth and development. Thus the middle-class parent takes on the role of teacher and provides many learning opportunities, even while the child is still in the infant stage. The child's first fumbling attempts at walking and talking are eagerly attended and warmly reinforced. There is a great deal of verbal interaction; childish questions are responded to with serious consideration, and the child soon learns that seeking information is doubly rewarding: he gains greater control over his environment and also receives a large measure of parental approbation.

The child from the socioeconomically-disadvantaged home does not usually see his parents as teachers. In most cases, the verbal interaction is extremely limited, extending primarily to demands, rebukes, and expletives. There is every reason to believe that this is a major factor in perpetuating the cycle of school failure in the poverty population. Parents who are limited in their own use of language and who are unaware of its value as an intellectual tool, are poorly qualified to provide the type of stimulation the preschool child needs.

For the pilot experiment, eight parent-child pairs, randomly selected from each of two Head Start centers are being taught a technique for expanding the child's use of language. Through specially-prepared picture books, consisting of a sequence of paired pictures, two independent but parallel stories are presented. Thus pictures one and two are of a boy and a girl; the commentary reads: "This is Tom; this is Betty." The next set of pictures are: "Tom is a little boy; Betty is a little girl." The story continues in parallel fashion through about 20 paired sets of pictures. The first time through the book, the adult reads the commentary for both pictures. The second time, the adult says: "I'll tell you the story of Betty and you tell me the story of Tom." Finally, the child on the third trial tells both parts of the story.

The treatment for the test experiment consists of having the Head Start classroom teacher present the books, and instructions on how to use them at home, to groups of three or four parents in the school setting. The parents come to the school one day a week for four weeks and are given a different story book each time.

Criterion tests, given as both pre-and-post measures, will consist of the Parent Interview, to measure changes in parents, and a parallel-production test to measure changes in children's ability to produce well-formed sentences. If the results of this study show positive effects on either the parents or the children, a longer training program will be given, with a new Head Start population entering in the Winter semester. At this time, a treatment which will involve a program for teaching each parent directly will be compared with the one in which the Head Start teacher also teaches the parents of the children.

The instrument to measure alienation will be used in addition to the parent interview for the parents, and standard measures of verbal ability as well as tests over content and reading skills will be given to the children.

## Parent Interview

### A Measure of Parental Attitudes to Detect Change as a Function of Participation in the Head Start Program

1. When you first heard about the Head Start program, what did you expect it would do for your child and how did you think he'd respond to it?
2. Do you feel that Head Start has done what you expected it to do?
3. Why do you feel that this happened?
4. What would you like to see this program do for your child?
5. When you first heard about the Head Start program, what were some of your worries and concerns about this?
6. When you first heard about Head Start, what did you expect it would do for you?
7. Do you feel that Head Start has done what you expected it to do for you?
8. Why do you feel that this happened?
9. What would you like to see this program do for you?
10. What did you expect the teachers would be like?
11. Do you feel that the teacher was like what you expected her to be?
12. What things would you like to see the teacher do?
13. Do you feel that Head Start asks for too much of your time? Why?
14. In what ways do you feel different about Head Start now?
15. What changes have you noticed in your child and/or his behavior since he has been in Head Start?
16. If you or someone in your family is ill, where would you go?
17. If you had a legal problem, where would you go?
18. If you had a financial problem, where would you go for help or where have you gone?
19. If you had a personal, marital, or family problem, who would you go to for help, or where have you gone for help?
20. Do you belong to any local community groups or neighborhood associations of any type?

## Parental Interview (con't)

21. Did you vote in the last Presidential election?

22. Did you vote in the last state and congressional election in 1966?

23. What kinds of things do you and your children do together?

24. If you could do anything you wanted for one day with no restrictions, what would you really like to do?

25. If you had $200 to spend on anything you wanted, what would you spend it on?

26. If you had nothing that interferred with your doing what you'd really like to do, what would you like to do during the coming year?

27. If you had $2,000 to spend on anything you wanted, what would you spend it on?

28. What kind of work would you like your child to do when he grows up?

29. How much schooling would you like your child to have?

30. If you were in charge of planning a program for young children, what kinds of things would you like to see included?

31. What area or part of this kind of program do you feel would be the most important?

32. What part of the program do you feel the children might like best?

33. What kinds of activities and programs, if any, do you think should be available to parents?

34. Have you, yourself, taken part in any of the Head Start activities for parents?

35. What do you think about these programs - how do you think they could be made better - more enjoyable - more worthwhile?

36. What do you like about these programs?

37. Was there anything you disliked?

38. In general, if you could make three changes in Head Start, what would they be?

39. If you had a friend or a neighbor with a child of Head Start age, do you think you would encourage her to take part in the program?

40. What sort of life would you like your child to have when he grows up?

2. Has your child ever been in any other preschool program? ____

Your Family or Other Persons Living in the Home

| | Sex | Age | Amount of Education or present grade in school | Marital Status | Relationship to you | Place of Birth | What Language does he or she speak? | How Many Weeks Worked During Past Year? At What Salary? | Other income (BPA, Social Security, alimony, child support, unemployment.) |
|---|---|---|---|---|---|---|---|---|---|
| Yourself | | | | | | | | | |
| Others (Children & Adults) | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

4. Religious preference? ____

5. How long in Los Angeles? ____

6. How long in present neighborhood? ____

7. If born in another country, how long in U.S.? ____

8. Race or Ethnic Group ____

## Project IV

## Development of Evaluation Instruments for Young Children

### Principal Investigator

Carolyn Stern, Department of Education

| Research Assistants | Art and Production |
|---|---|
| Arrie Bachrach | Patricia Kingan |
| Alita Letwin | Lawrence Steinhauer |
| Elizabeth Raymer | Clarence Young |
| Ruth Silberstein | |

From the very beginning of Project Head Start, a major concern has been the lack of appropriate instruments with which to evaluate the effectiveness of the program. A further complication is that the multifaceted approach in Head Start is expected to produce many different types of changes, perhaps the least of which are those in the cognitive achievement domain, most susceptible to measurement and for which there are standardized tests.

Even here, the existing measures are open to criticism on many grounds. First of all, they have been validated with a middle-class population and for a long time have been accused of culture bias. Many "culture-fair" tests have been constructed but even on these tests children from disadvantaged families do not do as well as children from middle-class homes. Just as a scale cannot be impugned because the child it weighs is malnutritioned and hence does not weigh as much as a "normal" child, a measure which describes the level of a child's ability to perform certain tasks cannot be called biased because it reveals serious intellectual undernourishment.

A major line of research at the UCLA Evaluation and Research Center is the development of instruments to objectively measure changes in children's behavior in both the cognitive and affective domains. The cognitive measures are concerned with levels of ability to effectively discriminate stimuli in both the auditory and visual modalities. Also, measures of children's ability to use language and to respond to spoken language are being constructed and tested. Although most intelligence tests do include vocabulary and verbal reasoning items, the numbers of such items is usually too limited to obtain a picture of the child's range of ability, which might have some diagnostic value.

Two reports have been completed and are being submitted as separate papers with this Annual Report. The first is a paper read at the Biennial Meeting of the Society for Research in Child Development in New York City, April, 1967. The second is a paper which was presented at the American Psychological Association Annual Meeting in Washington, D.C. In September, 1967.

Some of the findings from a pilot study with the Echoic Response Inventory for Children is included in the present report. The work of modifying and validating the Children's Auditory Discrimination Inventory and the Expressive Vocabulary Inventory is still in progress.

In the affective domain, several approaches to evaluation are being tried out. The child's concept of himself as a person will be tested through a series of pictures of boys and girls of various ethnic origins, to determine how these children see themselves. A second line of investigation is the development of an instrument to measure the child's sense of his own competence in a variety of situations. Two sets of ten picture cards, one showing boys and the other girls, in a variety of problem confrontations, have been prepared and are now being tested cross-culturally to establish scale values. When this instrument has been validated, it will be used as a pre- and posttest measure to determine whether increasing a child's actual competence results in a measurable change in his feelings of competence.

Another approach to measurement in the affective domain is still in the planning stage. This new test will involve some type of game situation, such as concentric circles on a square of linoleum in which the task will consist of the child's throwing a beanbag to see how close he can get to the center. A box of trinkets (reinforcers) will be made available and the child will be told to take one whenever he feels he has made a particularly good throw. The situation lends itself to a variety of manipulative procedures in which to pose a number of extremely important questions related to motivation and aspiration. If the pilot work with this task proves successful, a number of similar items will be devised to provide a series of tasks for a behavioral scale.

All the above instruments are concerned with measuring changes in children. Another area in critical need of instrument development is that of curriculum observation.

The Directors of the Head Start E & R Centers, meeting in Denver in November, 1966, expressed a great deal of uneasiness that the only instrument being used to evaluate the classroom input was the Observer Rating Form, which focusses its attention primarily on teacher-child interactions. A number of Center Directors felt that this did not provide information about what may be called the "substantive content" of the curriculum. That is, children engage in a variety of learning experiences independent of immediate adult intervention. The amount and richness of these experiences are at least partly a function of the equipment made available to children and the educational philosophy and organization of activities provided at a particular site.

As a result of the discussions, Dr. Edmund Gordon, then Director of Research and Evaluation for Project Head Start, appointed a committee consisting of Leon Ovsiew, Temple University, Edward Johnson, Southern University, and

Carolyn Stern, UCLA, to explore the possibility of developing an instrument to look at curricular classroom input, as a supplement to the Observer Rating Form. Because of the lateness of funding and the pressure to get the basic evaluation testing done, the work of this committe proceeded rather fitfully until March, 1967, at which time two specialists in the field of early childhood education were employed at UCLA to prepare the basis for a curriculum evaluation procedure.

When the Center Directors met in New York City in June 1967, committees were set up to consider evaluation instruments in five areas: cognitive, social-emotional, family, teacher behavior, and curriculum. At the end of the June meeting these five committees were reduced to three, with the teacher behavior and curriculum committees merged into a classroom observation committee under the co-chairmanship of Frank Garfunkel and Carolyn Stern. The Boston group was to continue to work on the observation of teacher behavior under structured task conditions, the UCLA group would continue with attempts to measure substantive curricular input.

A meeting of the joint committee, including John Dopyera, Syracuse, Frank Garfunkel, Boston, Edward Johnson, Southern University, Shuell Jones, Tulane, and Carolyn Stern, UCLA , was held at Los Angeles in July to discuss instruments for the 1967-1968 evaluation, and a number of possible approaches were discussed. It was decided that during the rest of the summer Dopyera, Garfunkel, and Stern would work on alternative approaches and Johnson and Jones would re-examine the work on the ORF to determine if it should be recommended for inclusion in the 1967-1968 package. Since Garfunkel was remaining on the West Coast for the summer, he would consult with the UCLA group in helping to structure the curriculum observation protocol for presentation at the Dallas meeting of the Executive Committee.

As a result of this meeting, a subsequent meeting in New York City, and the Washington, D.C. Evaluation and Research Center Directors' meeting, the instruments and design to be used for classroom observation for the national evaluation sample as well as the Curriculum Cluster E & R Sample was determined.

The Manual for the Observation of Substantive Curricular Input is appended to this Report as a separate document. In addition to the OSCI, UCLA has prepared several instruments for obtaining data about children, classes, and teachers. The following three pages are copies of this material.

## Characteristics of Teaching Staff

ant #__________ Center I.D. #______ E & R I.D.______

me of Center__________ Address__________

mber of Classes in Center__________ Number of Children in Center__________

mber of Classes in Sample__________ Number of Children in Sample__________

Codes for each teacher (or Other Paid Adult directly involved with children):

tem a. Teacher
1 = Head Teacher
2 = Teacher Aide
3 = O.P.A.

tem b. Age
1 = Under 16
2 = 16 - 21
3 = 22 - 27
4 = 28 - 33
5 = 34 - 39
6 = 40 - 45
7 = 46 - 51
8 = 52 - 57
9 = Over 58

tem c. Sex
1 = Male
2 = Female

tem d. Ethnic Background
1 = Negro
2 = Mexican-American
3 = Puerto-Rican
4 = White
5 = Amer.-Indian
6 = Oriental
7 = Eskimo
8 = Polynesian
9 = Other

tem e. First Language
1 = Standard English
2 = Mexican-Spanish
3 = Puerto-Rican Spanish
4 = Oriental
5 = Amer.-Indian
6 = Polynesian
7 = Dialect[1]
8 = Other

tem f. Years of School Completed
1 = None
2 = 1 - 4
3 = 5 - 8
4 = 9 - 10
5 = 11 - 12
6 = 13 - 14
7 = 15 - 16
8 = Over 16

tem g. Diploma, Degree, Credential
1 = None
2 = Elementary
3 = High School
4 = Bachelor
5 = Master
6 = Doctoral

tem h. Length of experience with preschool children:

tem i. Length of experience with disadvantaged children:

tem j. Length of experience with Head Start program:

1 = Under 6 months
2 = 6 months to 1 yr.
3 = 1 yr. to 3 yrs.
4 = 4 to 5 yrs.
5 = Over 5 yrs.

| I.D. # of Sample Class | a | b | c | d | e | f | g | h | i | j |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

---

[1] Use code 7 plus additional language code for appropriate dialect

[2] Fill in appropriate code as indicated in Items a - j above

UCLA 1967

## Description of Center and Classroom Composition[1]

ant #______________________ Center I.D.#______ E & R I.D.______

ne of Center______________________ Address______________________

### Age[2] (by Sex)

| | Under 3-6 | | 3-6 to 3-8 | | 3-9 to 3-11 | | 4-0 to 4-5 | | 4-6 to 4-8 | | 4-9 to 4-11 | | Over 5 Yrs. | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class I.D.# | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

### Ethnic Background[3] (by Sex)

| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ss I.D.# | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

### Child's First Language[3] (by Sex)

| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ss I.D.# | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

### Site Description

| nter D.# | Class I.D.# | # of Children per Class | # of Separate Rooms per Class | Differentiated Areas (# of) | | Sq. Ft. per Child | |
|---|---|---|---|---|---|---|---|
| | | | | Rm 1 | Rm 2 | In | Out |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

---

cludes all children and classes at Center.

gured from date Head Start Class begun, regardless of when child enrolled.

mbers 1-9 refer to same Codes used in Teacher Description, Items d and e.

## RATING SCALE OF FACTORS AFFECTING TEST PERFORMANCE

| | 2 | 1 | 0 | 1 | 2 | |
|---|---|---|---|---|---|---|
| I. PRE-TEST BEHAVIOR | | | | | | |
| A. Willingness to Participate | | | | | | |
| 1) Enthusiastic | | | | | | Actively Objects (Refuses) |
| 2) Interested participation | | | | | | Detached |
| B. Response to Examiner | | | | | | |
| 1) Trusting | | | | | | Suspicious |
| 2) Compliant | | | | | | Antagonistic |
| II. TEST BEHAVIOR | | | | | | |
| A. General Test Behavior | | | | | | |
| 1) Normal activity level | | | | | | Hyperactive or depressed |
| 2) Initiates activity | | | | | | Waits to be told |
| 3) Quick to respond | | | | | | Urging needed |
| 4) Absorbed by task | | | | | | Easily distracted |
| 5) Long attention span | | | | | | Short attention span |
| 6) Maintains interest until completion | | | | | | Loses interest |
| B. Problem Solving Behavior | | | | | | |
| 1) Persistent | | | | | | Gives up easily or can't give up |
| 2) Eager to continue | | | | | | Seeks to terminate |
| 3) Responds to failure positively | | | | | | Withdrawing, hostile or denying |
| 4) Tries alternatives | | | | | | Uses one method only |
| 5) Stimulated by novelty | | | | | | Apathetic |
| 6) Guesses freely | | | | | | Takes no chances |
| 7) Considers response carefully | | | | | | Reacts impulsively |
| 8) Challenged by hard tasks | | | | | | Prefers only easy tasks |
| III. OVERALL CHARACTERISTICS | | | | | | |
| A. Use of Language | | | | | | |
| 1) Active use in mediation | | | | | | Non-verbal |
| 2) Fluency | | | | | | Limited verbal output |
| B. Emotional Adjustment | | | | | | |
| 1) Socially confident | | | | | | Shy, reserved, reticent |
| 2) Ability to absorb failure | | | | | | Distrusts own ability or unrealistically overconfident |
| 3) Comfortable in adult company | | | | | | Ill at ease |
| 4) Feels competent to handle situations | | | | | | Anxious about success |
| 5) Needs minimal approval or support (autonomy) | | | | | | Requires constant approval and support (dependence) |
| IV. TEST CONDITIONS ______ | | | | | | If inadequate, describe type of disruption. |

## Echoic responding of disadvantaged preschool children as a function of type of speech modeled

In the many discussions which have been carried on recently about the education of disadvantaged children, it has been implied that the dialect of many of these children reflects a language which is as functional for purposes of communication as standard English. This has led to the suggestion that it is unnecessary to devote much attention within the intervention program on improving children's pronunciation or in teaching children to speak and understand the accepted school language. There have been some attempts to use the child's dialect as a way of introducing him to reading; primers have been written in the vocabulary and grammatical forms of this dialect.

On the other hand, as Dr. Beryl Bailey of Yeshiva University eloquently points out, the realities of school expectations must be faced: these require that every effort be made to teach the child to produce standard speech forms. It is also possible that Negro vernacular acts as an interference in acquiring skills of beginning reading.

There is little empirical data to support either position. Up to the present, there has been no instrument to compare children's ability to reproduce material presented in dialect vs standard English. The study included under Project I in this report attempts to compare actual content learning under treatments which vary the language in which the instruction is presented. The findings in that study demonstrate no advantage for instruction presented in dialect, and there is some possibility that the contrary is true, that is, that even Negro children accustomed to dialect speech in their homes and community will learn more when the instruction is presented in standard English. However, the results of this study may be confounded with differences in learning rates, as well as other variables independent of differences in ability to respond to the two language forms.

Probably the simplest level of language production is echoic responding or imitative behavior. However, it can be assumed that the ease with which an utterance can be repeated is a function of the degree of familiarity the responder has with a particular chain of verbal stimuli. Thus it may be much easier for an adult to repeat a long sentence in his native language than a short phrase in an unfamiliar one.

To obtain a measure of the range of sentence complexity with which the child is familiar, the Echoic Response Inventory for Children has been developed. This instrument presents a sequence of 20 sentences, ordered in length and transformational difficulty. The sentences are recorded on magnetic tape for consistent and replicable presentation. There are two forms, equated in linguistic complexity, which can be used as pre- and posttest measures in either language experiments or developmental studies. In a preliminary analysis, the instrument has shown a reliability of .79 (Kuder-Richardson Formula 20) and interform reliability of about .98.

The scoring of the test at present is confined to a simple count of the number of sentences, regardless of length, which have been repeated with no more than one error. Thus there is a maximum score of 20 points.

This instrument has been used in two parallel studies, with a limited number of children. The hypothesis for both studies was that the four-year-old child will perform better on a test requiring the echoing of sentences when these sentences are presented in the speech characteristic of the community in which he was raised.

In the first study, the test was administered to 21 Caucasian children in Day Care Centers. All children were given both forms of the test, with one-fourth the group hearing Form A in dialect first, Form B in standard English second; one-fourth heard Form A in standard English first, followed by Form B in dialect; one-fourth heard Form B in dialect, Form A in standard English; and finally, one-fourth heard Form B in standard English first, followed by Form A in dialect. Because of the high correlation between the two forms, no separate analysis was made for Form A as against Form B. With respect to the order in which the child was exposed to either dialect or standard English, the assumption was that the design would control for the effect of this variable. 3

For these children, the mean for the test taken in standard English (16.7, SD 5.4) and that for the test taken in dialect (15.0, SD 4.9) was significant at the .01 level (t= 3.33).

However, when the same procedure was used with 20 Negro children in two Head Start centers, no significant differences were found. (See Table 1.) 3

- - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - -

Table 1

Scores on ERIC Made by Head Start Negro Children with Dialect and Standard English Commentary Presented Either First or Second

| | | | Dialect First | | Dialect Second | | Standard English-First | | Standard English-Second | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Sex | M | SD | M | SD | M | SD | M | SD |
| Form A | 5 | M | 10.2 | 2.2 | 10.2 | 3.3 | 9.0 | 3.9 | 10.6 | 3.3 |
| | 5 | F | 8.2 | 5.4 | 10.4 | 1.3 | 11.4 | 2.2 | 11.8 | 4.3 |
| Form B | 5 | M | 13.0 | 3.4 | 8.2 | 3.6 | 9.6 | 5.1 | 8.8 | 4.2 |
| | 5 | F | 12.8 | 3.3 | 9.4 | 6.7 | 9.6 | 2.7 | 8.4 | 4.9 |

In the latter study, the effects of sex and order were also tested but no significant differences due to these variables were found.

Taken alone, each study with its small N is not very conclusive. However, there seems some basis for a hypothesis that Negro children have been exposed to enough standard English speech (probably via the television) so that it does not present as much of a problem as dialect does to the child who is accustomed to hearing standard English. Further research with a larger and more diverse population is needed before any reliable inferences can be drawn. At present, it does seem that Negro children are able to respond to the speech of the dominant culture, without loss of comprehension. In the light of the social and educational values of standard English much more justification for using dialect as a language of instruction would have to be presented before such a procedure should be advocated in either Head Start classes or in the early grades.

## Project V

## Experimental Investigation of Variables in Teaching Mathematical Concepts to Young Children

Principal Investigator

Avima Lombard, Department of Education

| Research Assistants | Clerical Assistants |
|---|---|
| Lynn Hasson | Suzanne Clark |
| Mary Johnson | Alex Friedland |

As the first step in investigating the efficacy of different types of instructional procedures, a doctoral dissertation has been completed with the support of the UCLA Evaluation and Research Center. This study attempted to determine what types of techniques are most effective in instructing children, and at the same time try to answer the need expressed by many Head Start teachers for appropriate instructional materials.

The central question was whether differences in learning a manipulative problem-solving task such as puzzle-assembly is a function of the number of related subskills taught. This hypothesis was tested with 65 children from Head Start classes, randomly assigned to one of four treatment groups. The treatments were: 1) puzzle assembly with instruction emphasizing the appropriate vocabulary; 2) stories in which the vocabulary was developed, but no practice in puzzle assembly; 3) puzzle assembly practice without relevant vocabulary instruction; and 4) Control with no special instruction between pre- and posttests.

The puzzles were presented in specially designed puzzle boxes which automatically controlled the order in which the children received the puzzles. Twenty puzzles were used in the program, all but three of these being specifically created for the program so as to insure an ordered hierarchy of difficulty along controlled dimensions.

Results indicate that both instruction and guided practice with puzzles produce significant gain in puzzle-assembly skills. Verbalization with no practice was ineffective.

# Effectiveness of instruction in puzzle-assembly skills with a Head Start population

Story-books, pictures, and puzzles are commonly found in the homes of middle-class children, and become part of their every day experience. They learn to listen to stories and to put puzzles together at home, and continue such activities when they enter the nursery school classroom.

Jigsaw puzzles are included in nearly all listings of standard equipment for good curricula in the preschool classroom. Some of the values attributed to the use of puzzles for young children include the opportunity for practice in eye-hand coordination, use of small muscles, recognition of shape and color, and use of visual memory (Hammond et al., 1963); helping the child develop a sense of form and color (Kirk, 1942); providing acceptable small muscle coordination, use of small muscle coordination experiences, developing spatial relations and the recognition of likenesses, differences, and form (L. A. County, 1946); sensory development (Davis, 1963); and developing finger dexterity (Carlson and Gingland, 1961).

However, children from economically depressed areas frequently get little or no exposure to comparable play materials at home. They arrive in Head Start with minimal knowledge of how to deal with standard middle-class nursery school equipment such as construction and art materials, books, and puzzles. Their teachers are faced with the difficult task of trying to teach, in a period of months, skills acquired by more advantaged children over three to four years. The need for effectiveness in instruction therefore becomes of paramount importance with this group.

Several investigators have pointed out that all young children can profit from instruction in the use of puzzles (cf. Gips, 1950; Kneist, 1956). Robinault (1954) suggests that puzzles may fail to attract children because they present too great a challenge in their complete form, and offer more opportunity for failure than success. The Montessori procedure has always called for the teacher to play an active role in providing "materials and activities with which a child can be successful" (Tarney, 1965). The best materials, however, "will not assure any particular result or even guarantee to arouse interest in the child who is not presented them by a prepared adult in a situation favorable to his satisfactory use." (Rambusch, 1962).

A manipulative problem-solving task such as the assembly of a jigsaw puzzle or formboard involves solution of any problem situation through the manipulation of physical objects. There are three major component subskills: visual discrimination, which refers to the ability to discriminate and select likenesses and differences in drawn shapes and forms when presented in contexts which vary as to background, positioning, size, etc.; manual dexterity, which implies small muscle control and the ability to use the fingers skillfully in rapid manipulation of small objects, such as puzzle pieces; and verbal mediation, where the use of verbal labels facilitates self-cueing directed toward problem solving. The object of the present investigation was to compare three methods of teaching Head Start children these puzzle-assembly skills. Two of these techniques are ones commonly used in preschool settings; the third is a new one especially designed for this population.

## Hypotheses

It was hypothesized that Head Start children can be taught a manipulative problem-solving task such as puzzle-assembly through instruction in the subskills involved. More specifically, it was predicted that the most effective form of instruction would include the greatest number of subskills. Children who were instructed in all three subskills would thus do better than children who were taught visual discrimination and either verbal labeling or manual dexterity. In addition, it was postulated that instruction with verbal labeling would produce greater learning than instruction in subskills without it.

## Method

The study involved two phases: 1) the development of instructional materials, and 2) the experiment. The instructional materials were tried out and revised with children in a Head Start center similar to the centers used for the actual experiment. Each lesson consisted of six puzzles. Both instructions and puzzles were modified as indicated by the children's performance.

### Subjects

Sixty-five subjects (See Table 1 for description of population.) were

- - - - - - - - - - - - -

Insert Table 1 about here

- - - - - - - - - - - - -

drawn from three Head Start centers in a suburb of Los Angeles. The centers were located within a ten block area and were under the supervision of a single delegate agency and one child development supervisor.

### Pretests

Pretests were given to all the children. The pretests included measures of intelligence as well as criterion tests related to the learning tasks. The tests, in the order in which they were administered, were as follows:

1. Peabody Picture Vocabulary Test, Form A: This test was selected as a measure of general intelligence, with a high verbal factor loading.

2. Goodenough Draw-a-Man Test: A non-verbal test of intelligence, which seems to be related to the eye-hand coordination components of the learning tasks.

3. Visual Discrimination Inventory (VDI): A non-verbal test which measures the child's ability to discriminate shapes and figures under situations requiring form constancy, figure-ground, closure, and position-in-space.

4. Formboard: A timed measure of manual dexterity with an easy puzzle assembly task. Previous experience with children of this age indicated that the task of placing pieces in a nine-piece formboard was not a difficult problem. All children were able to do it. When their performance was timed, however, differences in skill were easily discernible.

5. Vocabulary: A measure of the child's familiarity with the terms to be used in the instructional program. Four levels of skill were included. The most difficult task was assumed to be one in which the child was asked to name the shape held up by the examiner. The second level was to point to the shape named by the experimenter and the third level was to find another shape like the one held by the examiner. Those children who could name the shapes were assumed to be able to match them and point to them, and were not given these two subtests. They were, however, asked to find examples of the shapes in a realistic picture. Those who could neither name the shapes nor point to them were assumed not to be able to find them in the natural setting. Thus only three parts of the test were given to a child, depending on his performance on the first part.

6. Puzzles: A measure of puzzle strategy and assembly skill. Six commercial puzzles (Playskool) were selected to represent increasingly difficult levels of achievement. After the examiner and the child scanned the first picture puzzle together, the examiner removed the pieces and asked the child to replace them as quickly as possible. If the child hesitated or engaged in unsuccessful activity for 30 seconds, the examiner made a verbal suggestion to the child. Every 15 seconds thereafter, the examiner, if needed, assisted either by placing a piece in the puzzle (manual assist) or making a suggestion (verbal assist). These assists were charged at the rate of two points for a manual and one point for a verbal assist. If the child completed the puzzle within a three-minute period, with or without assistance, he was presented with the next puzzle in the same manner. If he failed to complete the puzzle within three minutes, the examiner completed it with him, allowing the child the satisfaction of putting in as many pieces as possible. No additional puzzles were then presented.

Scores for this test were computed by adding the number of seconds and the number of assist points used to complete each puzzle, and subtracting this sum from the maximum score possible for the puzzle. The resulting sum represented the positive points "saved" for each puzzle attempted.

7. Wood Block: A timed measure of simple manual dexterity. Children were presented with a small block of wood in which there were two eye-screws. The child was taught to turn the large screw until it was all the way down. He was then asked to do the same with the small one. Since handedness might have been an issue, the performance was repeated with the other hand and the lowest time was recorded.

## Treatment Groups

Following the pretests the children were divided into four treatment groups. All the children at one center were designated as the Control (C) group. Children at the other two centers were randomly assigned so that there were five children in each class in each of three experimental treatments: 1) Instruction (I); 2) Practice (P); and 3) Stories (S).

The Instruction (I) treatment was taught to assemble puzzles under a carefully sequenced program of puzzles and related vocabulary. The Practice (P) treatment was given equal time with the same carefully sequenced puzzles, but learned no vocabulary. The Stories (S) treatment read books which emphasized vocabulary related to shapes, sizes, position, etc. They were not given puzzles. The Control (C) treatment read stories of general interest, unrelated to concepts involved in the study.

Two young Caucasian women were selected as teachers for the experiment. Both had had previous experience with Head Start children and had been especially trained to use the instructional materials.

Each experimental treatment consisted of nine lessons over a four-week period. The lessons were approximately fifteen minutes long and were presented to groups of three- to five-year-old children every other day, with each teacher, teaching on alternate days at each center.

Since none of the centers could provide adequate space for the puzzle program, a large step-van was fitted out as a mobile classroom. The van was carpeted, adequately lit, and well-ventilated.

### Materials

Puzzles. Twenty 9 x 11 inch puzzles were used. (See Figure 1 for sample puzzles.) Three of these were commercially made, the remainder were designed

- - - - - - - - - - - - - - -

Insert Figure 1 about here

- - - - - - - - - - - - - - -

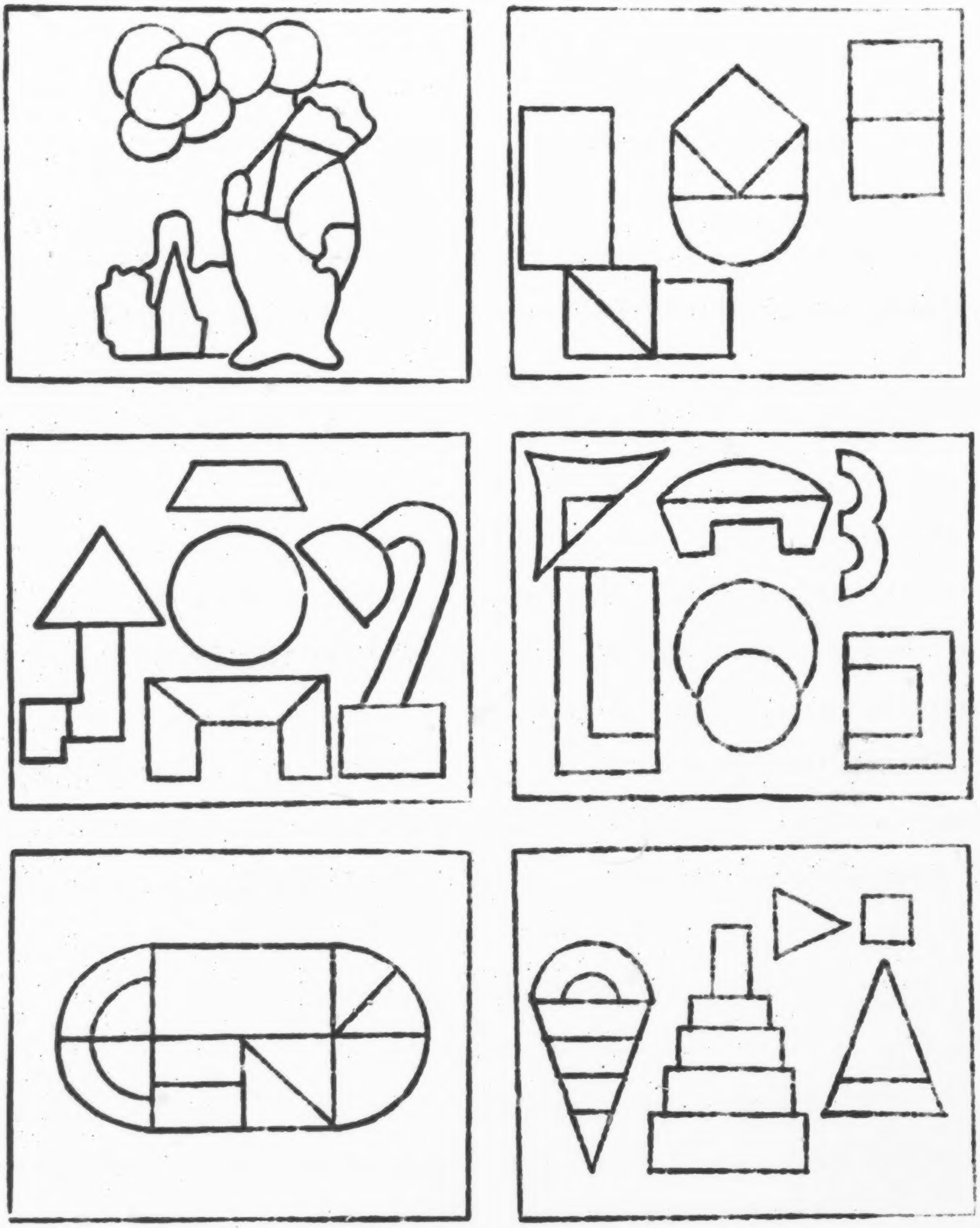

Figure 1. Samples of puzzles used in the final lessons.

and constructed for the experimental program. They ranged in difficulty from a simple three-piece formboard to designs which included 15 pieces. Eleven of the instructional puzzles represented geometric forms in abstract designs. They were painted in bright colors - one solid color to a board. For these puzzles, therefore, the shapes and sizes of the pieces were the only cues for their selection.

Puzzle-Boxes. All the puzzles were presented to the children on trays in specially designed boxes (See Figure 2). Each box was designed to hold six stacked trays in such a manner that the removal of the top tray would automatically raise the next tray to working position. Thus, the child could pull out the tray with a completed puzzle, automatically replacing it with the next puzzle in the programmed sequence.

- - - - - - - - - - - - - - -

Insert Figure 2 about here

- - - - - - - - - - - - - - -

The puzzle-boxes were placed on the carpeted floor of the UCLA mobile classroom in which all the puzzle training took place. The children knelt or sat on the floor while working on the puzzles. (See Figure 3.)

- - - - - - - - - - - - - - -

Insert Figure 3 about here

- - - - - - - - - - - - - - -

Script. A prepared script was used in instruction for puzzle assembly (Treatment Group I). This script contained the teacher's commentary and stated which visual stimulus materials were to be used, in what order they were to be presented, and how they were to be shown to the child.

Books. Ten children's story books were used for Treatment Group S, the Stories group. Nine were commercial books which incorporated selected concepts

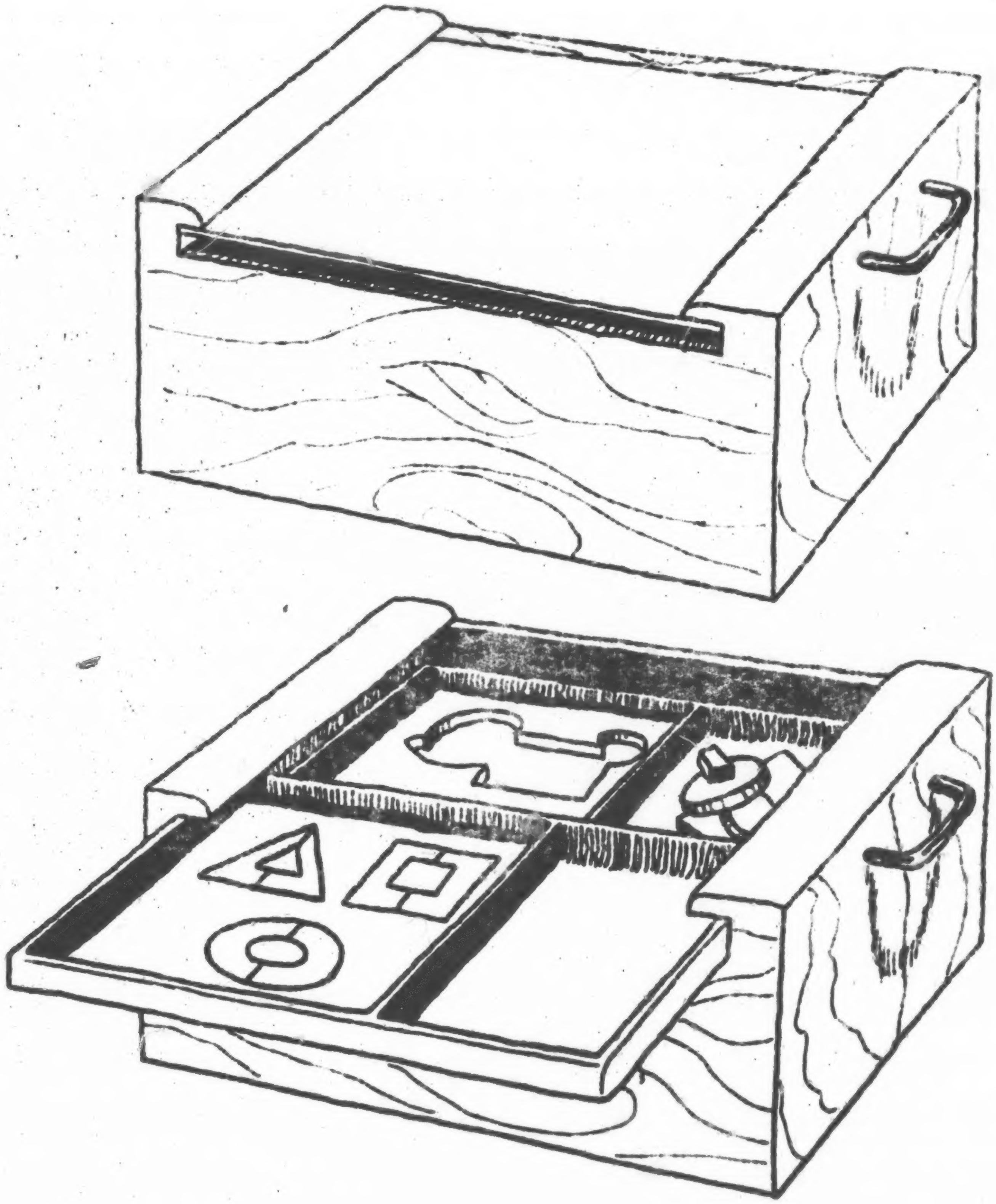

Figure 2. UCLA-Six-Tray Automatic Feed Puzzle Box

of size and shapes. The terminology was simplified where necessary (i.e., "big" was substituted for "large", "round shape" for circle, etc.) so that the vocabulary presented to this group was the same as that given to the Instruction group. A tenth book, "The Story of Mr. Triangle, Mr. Square and Mr. Round" was especially written and illustrated for this study, and the story was used with both the Instruction and Stories groups. This special book was prepared because the concepts of triangle, square, and round were basic to the experiment and could not be found together in commercial story books.

The books read to the children in the Control group were selected at random from the regular supply in the classroom.

Experimental Training Programs

Instruction (I) treatment. This treatment was taught to identify and label shapes and characteristics of puzzle pieces and spaces. A total of twenty puzzles were used, progressing from easy to more complex. Methods of assembling puzzles were taught, and the children were told which piece to put in and which to take out. They moved from puzzle to puzzle together, removing each tray only when instructed to do so by the teacher. Repeated practice was provided to encourage speed and accuracy. Initially, three shapes were presented to the children: round, triangle, and square. These were reviewed at each lesson. All subsequent vocabulary was built in relation to these shapes: half-round, half-square, square corners, big triangle, small round, etc. No other shapes or labels for shapes were introduced. A rectangle was a long piece with square corners, and a semi-circle was a half-round. One story was used in this treatment group. It depicted shapes found in the first eight puzzles, and was incorporated in the script which was read to the children, with related puzzle-assembly following the story. A prepared script was used by the teacher throughout the program incorporating the teacher's

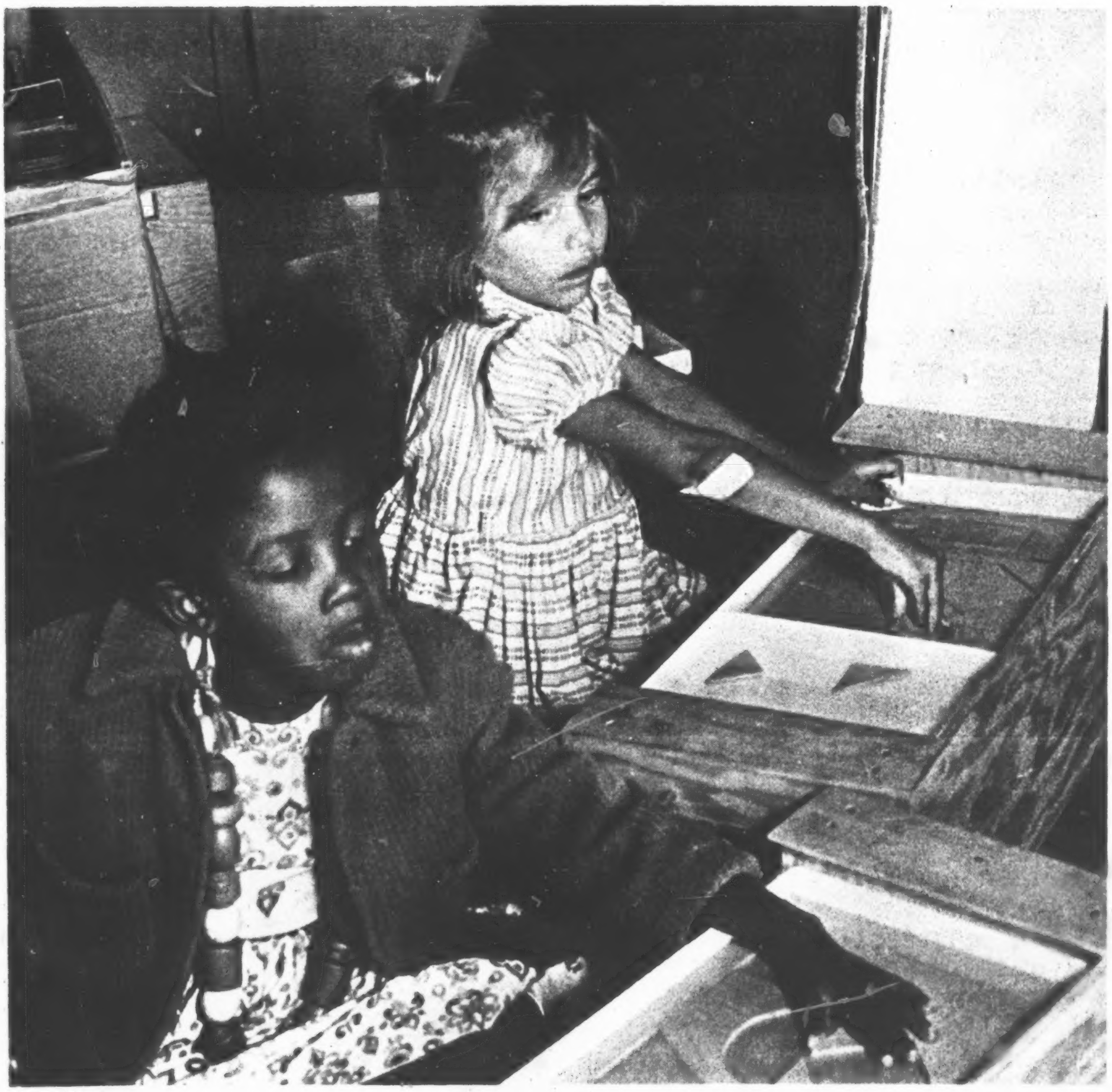

Figure 3. Children working at individual puzzle-boxes.

commentary, puzzle sequence, and classifications of the children's responses. The technique used for this treatment involved both manipulanda (items manipulated by the child) and vocabulary.

The children in the Instruction treatment were told, step-by-step, what to do. The technique taught for puzzle assembly was:

1. Look at the piece, identify its characteristics - shape, size, etc.
2. Look at the space available, identify its characteristics.
3. Find the piece or pieces that fit the space.
4. Turn the pieces around slowly until they fit.

This four-step sequence was repeated for all the lessons. The teacher would introduce characteristics by holding up a shape and saying, "Hold up the round piece". The child could confirm his selection by comparing the piece he chose with the one the teacher was holding. Specific instructions were faded only when, as a result of practice, the child could be expected to accomplish the task on his own. In such cases the script read: "You've done this puzzle several times. Now, take all the pieces out and put them back together again as quickly as you can".

In constructing the Instruction program an effort was made to conform to the following principles:

1. The material was designed to meet the needs of a specific population (Head Start).

2. The steps were small enough to insure success and minimize error.

3. Prompts were gradually faded so that, with successive lessons, the child was encouraged to solve the puzzles without teacher assistance.

4. Immediate positive reinforcement for learning was provided by successful placement of puzzle pieces. Immediate corrective feedback was provided where necessary by the child's observation of the teacher's labeling and placement of puzzle pieces (i.e., the child could follow the teacher's lead and place the

pieces successfully in his puzzle, with the accompanying positive reinforcement).

5. Completion of a puzzle was the cue to "pull out the tray and find the next puzzle". Anticipation of each new puzzle acted as a stimulus to continued attention to the task at hand. Thus, the child learned to be attentive and was regularly reinforced for attentive behavior.

6. Learning of abstract concepts and discrimination of shapes was strengthened by presentation of specific, selected vocabulary, with each concept formulated in a variety of circumstances. Provision was made for the child to identify as well as to reject a concept in a given circumstance. Each puzzle was painted a different color; the pieces represented a variety of sizes and shapes.

Practice (P) treatment. This treatment received the same puzzles in the same sequence without directions, identification, or labels. The teacher's verbalizations were limited to "turn the piece around", "try another piece", and "do the puzzle again". The children were encouraged to spend as much time on each puzzle as did their counterparts in the Instruction group, to insure equal exposure to the puzzles. When a child was unable to complete a puzzle, the teacher quietly put the pieces back for him. The Practice group dealt with manipulanda, but not with vocabulary.

Stories (S) treatment. No puzzles were used for this treatment. Instead, the shapes and relevant vocabulary were presented through the stories read. The children were encouraged to talk freely about the subject matter, look at the pictures in the books, and follow suggestions. Ten books were included in the program, developing a key vocabulary of 22 terms. Of course the books contained more than this required "key" vocabulary, and while an attempt was made to do so, the Stories treatment vocabulary could not be presented in exactly the same order as used in the Instruction treatment. Two story books were read at each lesson; after the original ten books had been read, the eight books most relevant to the puzzle program were repeated. This group was presented vocabulary but no manipulanda.

Posttests. Following training, posttests were administered individually to all 65 children. Pretests 3, 4, 5, 6, and 7 were given as posttests. In addition, two new tests were designed as measures of achievement and transfer.

The achievement posttest was given only to the Instruction and Practice groups. On the final day of instruction, all the pieces in Puzzle Number 20 were removed and the children were instructed to assemble the puzzle as quickly as possible. Both of these treatment groups had previously worked with this puzzle. It will be recalled that the Instruction group was taught to identify the parts and assemble them, while the Practice group was given an opportunity to do this but with no special instruction. Scores were recorded in the same manner as for the puzzle pretests (i.e., time to completion plus one point for each verbal assist and two points for each manual assist, subtracted from the maximum deficit score).

A transfer test consisting of two commercial puzzles was given to all treatment groups. These puzzles, presenting shapes which the children had not been given in puzzle sessions, were presented face down so that the pictures could not be seen. The pieces represented six wavy sections, and the child was asked to replace the two that the examiner had removed. This was then repeated with two other pieces removed, and the time and assistance required for each trial was recorded.

## Results

Table 2 presents the means and standard deviations, in months, for chronological age, and two measures of mental age, the Peabody Picture Vocabulary Test and the Goodenough Draw-a-Man Test. While the PPVT scores are higher for the Control treatment, a one-way analysis of variance on both measures by treatments indicates only chance difference among the four groups, providing assurance that all the groups were drawn from the same general population.

- - - - - - - - - - - - - -

Insert Table 2 about here

- - - - - - - - - - - - - -

Means and standard deviations on all dependent variables for all treatments are presented in Table 3. With the exception of the VDI, all the criterion measures were designed to test the hypotheses in this experiment. Results on the Formboard and Woodblock indicate that these two tests of manual dexterity are apparently measuring different things, with the Formboard test the more sensitive of the two. On the latter measure all groups except the Stories treatment showed marked decreases in time required for completion (54.6 to 35.2). With the Woodblock test, however, the changes from pre- to posttest were highly inconsistent,with the maximum gain being 32.7 to 28.3. This test is obviously not a useful measure for this study.

- - - - - - - - - - - - - -

Insert Table 3 about here

- - - - - - - - - - - - - -

All treatments groups improved on both the VDI and the Vocabulary tests. On the Puzzles test, however, the Stories treatment again produced reverse results, having done better on the pretest than they did on the posttest.

Correlations between the PPVT MA and both the Vocabulary and Puzzle pretests were significant at the .01 level. The VDI and Formboard pretest measures showed correlations with PPVT MA scores significant at the .05 level. Since there appears to be a reliable correlation between the criterion means and the PPVT, MA and pretest scores were used as covariates to control for initial differences in the treatment groups.

Analyses of covariance on posttest measures show treatment effects to be significant at the .01 level for the Vocabulary Formboard, and Puzzles (Posttest test. A Newman-Keuls analysis of the differences, using adjusted means, showed that the Instruction treatment scored significantly higher than the other treatments on the Vocabulary test. On the Formboard both the Practice and the Instru tion treatment scored significantly higher than the Stories treatment ($P \leq .01$ an .05, respectively). The same was true for the Puzzles posttest, with the Practice treatment doing better than the Instruction treatment.

The Instruction and Practice groups, who had had experience in puzzle assemb as part of their treatment, were given a second posttest on puzzle assembly (Pos test 2) to measure the speed with which they could assemble the last puzzle in t series. No differences were found between the treatments on this measure. A tr fer posttest, using commercial puzzles new to all the children, showed no signif cant differences among the four groups.

## Discussion

The major hypothesis of the study was that manipulative problem solving coul be taught to Head Start children through instruction in the subskills involved. Three experimental treatments were used. Practice (exposure to puzzles with no instruction) provided experience in the use of manual dexterity skills and visu discrimination. Stories, introducing children to new vocabulary with appropriate pictures, gave familiarity with the new words as well as ample opportunity for visual discrimination. Instruction provided experience with all the component skills involved in manipulative problem-solving. A Control group, who received neither instruction nor the special puzzle, was included to determine the effects of the experimental treatments.

The data indicate that both the Instruction and Practice groups showed significant gains in puzzle-assembly skill. The Stories group regressed in both the Puzzle and Formboard tests. These children appeared to lose interest, and had to be coaxed to continue after the first few days; the children in the other groups participated willingly throughout.

Evidently, a procedure which consists of listening to stories and looking at pictures does not get these children sufficiently involved so that they will put out the effort required in the manipulative tasks. Thus the present study finds support for only part of the major hypothesis. In other words, it is not the number of component subskills, but the type of experience provided which is the critical factor.

For the two groups that had puzzles in the experimental program, the Practice group, who spent more time in actual puzzle assembly, learned the manipulative problem-solving task more effectively than children who had instruction which included all the subskills. While this would seem to disprove the hypothesis predicting greater learning for the treatment which included the greater number of subskills, the differences among the treatments was not significant. However, the Instruction group did perform significantly better than all other treatments on the Vocabulary measure.

Instruction in the verbal labels produced a wider range of learning than instruction without labels; but where the verbal labeling was not accompanied by exposure to puzzles (as in the Stories treatment) the only learning was in terms of language acquisition, although even here the differences were unreliable.

The Vocabulary posttest was the only criteria measure which showed a statistical significance in the differences among scores for the experimental treatments and the Controls, with the Instruction treatment reliably superior to all the other treatments.

While differences among groups on the pretest scores were not large enough to be statistically reliable with this small number of cases, the Control group was consistently superior in all but the VDI test. Most likely this group had, by chance, a more enriched background, and began with greater skill in the tasks involved. However, in spite of this initial superiority, the gains made by the Controls were not as great as those made by either the Practice or Instruction groups.Failure of the Instruction group to demonstrate the predicted superiority may be due to the operation of a fifth variable which had not been included in the original design. Puzzle assembly involves the ability to develop a useful problem-solving strategy. Children exposed to the puzzles were given the opportunity to develop such strategies with the programmed sequence of puzzles. What were considered minimal prompts, such as, "Turn the piece around", or, "Try another piece", were evidently sufficient to develop the simple strategies adequate for these puzzles.

If we then, post hoc, consider that there are actually five sets of subskills, the Stories group were exposed to only two, while the Practice treatment had three, and the Instruction treatment, four subskills. The fact that the Practice group did not need to spend part of their time learning vocabulary and thus had more time to actually work the puzzles provides a logical basis for the level of their performance on the Puzzle posttest. The superior performance of the Instruction group on most of the dependent variables supports the second hypothesis: Instruction in a greater number of subskills produces more effective learning.

## References

Carlson, B. W., & Gingland, D. R. *Play activities for the retarded child.* New York: Abington Press, 1961.

Davis, D. C. *Patterns of primary education.* New York: Harper and Row, 1963.

Gips, C. D. A study of toys for hospitalized children. *Child Development,* 1950, *21,* No. 3.

Hammond, S. L., Dales, R. J., Skipper, D. S., & Witherspoon, R. L. *Good schools for young children.* New York: MacMillan, 1963.

Kirk, P. Make it for children. *Bulletin of the Association for Childhood Education,* 1942.

Kaiest, J. H. There is more to toys than meets the eye. *Crippled Child,* 1956, *6,* No. 5.

*Materials and equipment for four- and one-half-year-olds to seven-year-olds.* Los Angeles: Office of the County Superintendent of Schools, 1946.

Rambusch, N. M. *Learning how to learn.* Baltimore: Helicon Press, 1962.

Robinault, I. P. Perception techniques for the preschool cerebral palsied. *American Journal of Occupational Therapy,* 1967, *8,* Number 1.

Tarney, E. D. *What does the nursery school teacher teach?* New York: National Association for the Education of Young Children, 1965.

## Table 1

## Population: Distributed by Schools, Race, and Sex

| | School 14 | School 15 | School 16 | Total |
|---|---|---|---|---|
| Negro boys | 7 | 1 | 7 | 15 |
| Negro girls | 11 | 1 | 11 | 23 |
| Total Negro | 18 | 2 | 18 | 38 |
| | | | | |
| Mex.-Am. boys | 0 | 3 | 2 | 5 |
| Mex.-Am. girls | 1 | 3 | 5 | 9 |
| Total Mex.-Am. | 1 | 6 | 7 | 14 |
| | | | | |
| Cauc. boys | 1 | 7 | 1 | 9 |
| Cauc. girls | 0 | 4 | 0 | 4 |
| Total Cauc. | 1 | 11 | 1 | 13 |
| | | | | |
| Total boys | 8 | 11 | 10 | 29 |
| Total girls | 12 | 8 | 16 | 36 |
| Total | 20 | 19 | 26 | 65 |

## Table 2

## Means and Standard Deviations for C.A. and for M.A. on Peabody Picture Vocabulary and Goodenough Draw-a-Man Tests

| TRETMENT | N | Chronological Age |  | PPVT MA |  | Goodenough MA |  |
|---|---|---|---|---|---|---|---|
|  |  | Mean | SD | Mean | SD | Mean | SD |
| Instructions |  |  |  |  |  |  |  |
| Boys | 6 | 53.5 | 2.8 | 40.0 | 10.8 | 47.5 | 17.3 |
| Girls | 12 | 56.5 | 8.4 | 34.3 | 9.4 | 48.3 | 10.4 |
| Total | 18 | 55.5 | 7.1 | 36.2 | 10.0 | 48.0 | 12.6 |
| Rules |  |  |  |  |  |  |  |
| Boys | 5 | 54.8 | 3.0 | 37.4 | 9.2 | 49.8 | 10.7 |
| Girls | 11 | 53.3 | 4.1 | 34.5 | 7.5 | 45.3 | 9.7 |
| Total | 16 | 53.8 | 3.8 | 35.4 | 7.9 | 46.7 | 9.9 |
| Slides |  |  |  |  |  |  |  |
| Boys | 7 | 54.9 | 2.4 | 39.3 | 11.0 | 49.3 | 12.6 |
| Girls | 5 | 56.6 | 2.6 | 27.4 | 3.9 | 48.0 | 10.2 |
| Total | 12 | 55.6 | 2.5 | 34.3 | 10.4 | 48.8 | 11.2 |
| Control |  |  |  |  |  |  |  |
| Boys | 11 | 54.1 | 3.7 | 44.6 | 16.5 | 44.7 | 6.6 |
| Girls | 8 | 54.4 | 2.9 | 38.0 | 9.1 | 47.3 | 8.9 |
| Total | 19 | 54.2 | 3.3 | 41.8 | 14.0 | 45.8 | 7.6 |
| Total |  |  |  |  |  |  |  |
| Boys | 29 | 54.3 | 3.0 | 41.1 | 12.8 | 47.4 | 11.3 |
| Girls | 36 | 55.1 | 5.6 | 34.2 | 8.5 | 47.1 | 9.5 |
| Total | 65 | 54.7 | 4.6 | 37.3 | 11.1 | 47.2 | 10.2 |

Note. — Age recorded in months.

Table 3

Means and Standard Deviations on Pretest and Posttest Criterion Measures for All Treatment Groups

| Test | Instruction (N=18) | | Practice (N=16) | | Stories (N=12) | | Control (N=19) | | Total (N=65) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Visual Discrimination Inventory | | | | | | | | | | |
| Pre | 21.4 | 6.0 | 22.3 | 3.4 | 22.5 | 4.5 | 18.7 | 3.8 | 21.0 | 4.7 |
| Post | 24.2 | 4.8 | 26.1 | 5.8 | 28.4 | 5.5 | 23.4 | 4.1 | 24.5 | 5.0 |
| Vocabulary | | | | | | | | | | |
| Pre | 44.1 | 8.6 | 45.4 | 7.7 | 41.9 | 6.1 | 52.8 | 8.2 | 46.6 | 8.3 |
| Post | 62.6 | 10.5 | 49.4 | 7.4 | 49.5 | 14.6 | 55.6 | 10.4 | 54.9 | 11.8 |
| Puzzles | | | | | | | | | | |
| Pretest | 401.7 | 158.6 | 413.2 | 139.6 | 437.8 | 234.4 | 463.8 | 124.6 | 430.2 | 163.6 |
| Posttest 1 | 523.8 | 135.5 | 535.8 | 158.1 | 431.7 | 114.9 | 503.4 | 107.2 | 505.3 | 139.0 |
| Posttest 2 | 227.8 | 52.0 | 228.6 | 75.8 | (Not Given) | | (Not Given) | | (Not Given) | |
| Formboard[a] | | | | | | | | | | |
| Pre | 50.0 | 19.7 | 58.6 | 26.8 | 49.5 | 15.2 | 54.0 | 17.3 | 52.2 | 19.2 |
| Post | 36.5 | 11.0 | 36.2 | 12.5 | 53.2 | 18.6 | 41.1 | 17.7 | 40.6 | 16.1 |
| Woodblock[a] | | | | | | | | | | |
| Pre | 28.7 | 8.3 | 29.9 | 9.6 | 30.0 | 10.5 | 32.7 | 9.1 | 30.4 | 9.2 |
| Post | 27.6 | 7.2 | 30.0 | 14.1 | 29.1 | 8.3 | 28.3 | 7.3 | 28.7 | 9.4 |
| Transfer | 318.2 | 38.3 | 315.6 | 60.3 | 301.4 | 45.8 | 326.3 | 64.7 | 316.8 | 48.7 |

[a] These are timed tests: Low scores reflect better performance.

### Table 4

### Analysis of Covariance for Dependent Variables (with Pretest and M.A. as Covariates)

| Variable | Source | d.f. | M.S. | F |
|---|---|---|---|---|
| VDI | Treatment | 3 | 10.18 | 0.67 |
| | $Error_w$ | 59 | 15.27 | |
| Vocabulary | Treatment | 3 | 643.80 | 7.97** |
| | $Error_w$ | 59 | 80.75 | |
| Puzzles | Treatment | 3 | 52083.33 | 5.00** |
| | $Error_w$ | 59 | 10420.83 | |
| Formboard | Treatment | 3 | 862.53 | 5.18** |
| | $Error_w$ | 59 | 166.43 | |
| Woodblock | Treatment | 3 | 13.87 | 0.15 |
| | $Error_w$ | 59 | 91.88 | |
| Transfer | Treatment | 3 | 1608.35 | 0.88 |
| | $Error_w$ | 59 | 1836.14 | |

** $p < .01$